

UC-NRLF



QB 286 107

QUESTIONS ON  
LOGIC

YB 23119



UNIVERSITY OF CALIFORNIA

JAMES K. MOFFITT FUND

No.

Let there be light!

MK





The University Tutorial Series

---

General Editor

WILLIAM BRIGGS, LL.D., D.C.L., M.A., B.Sc.

PRINCIPAL OF UNIVERSITY CORRESPONDENCE COLLEGE

---

QUESTIONS ON LOGIC

## Philosophy.

**ETHICS, A MANUAL OF.** By J. S. MACKENZIE, Litt.D., M.A., Professor of Logic and Philosophy in the University College of South Wales and Monmouthshire, formerly Fellow of Trinity College, Cambridge, Examiner in the Universities of Cambridge and Aberdeen. *Fourth Edition, Enlarged.* 6s. 6d.

"In writing this book Mr. Mackenzie has produced an earnest and striking contribution to the ethical literature of the time."—*Mind*.

"This excellent manual."—*International Journal of Ethics*.

"Written with lucidity and an obvious mastery of the whole bearing of the subject."—*Standard*.

"The volume is a thorough and independent discussion of moral science and philosophy. Each of the chapters is written with great care, and with a freshness and originality that take the work quite out of the category of the ordinary textbook."—*Journal of Education*.

**LOGIC, A MANUAL OF.** By J. WELTON, M.A., Professor of Education in the University of Leeds. 2 vols.

Volume I. *Second Edition.* 8s. 6d.

Volume II. 6s. 6d.

Vol. I. contains the whole of Deductive Logic, except Fallacies, which are treated, with Inductive Fallacies, in Vol. II.

"A clear and compendious summary of the views of various thinkers on important and doubtful points."—*Journal of Education*.

"The manual may be safely recommended."—*Educational Times*.

**Logic, Questions on, with Illustrative Examples.** By H. HOLMAN, M.A., H.M.I., and M. C. W. IRVINE, M.A. 2s. 6d.

**Key.** By H. HOLMAN, M.A., H.M.I., and J. WELTON, M.A. 2s. 6d. net.

"It will form an admirable exercise for the student to test his reading by. This volume may be recommended without reserve."—*Educational Times*.

**PSYCHOLOGY, THE GROUNDWORK OF.** By G. F. STOUT, M.A., LL.D., Fellow of the British Academy, Professor of Logic and Metaphysics in the University of St. Andrews, late Examiner in Mental and Moral Science in the University of London. 4s. 6d.

"All students of philosophy, both beginners and those who would describe themselves as 'advanced,' will do well to 'read, mark, learn, and inwardly digest' this book."—*Oxford Magazine*.

"This book will lay a sure foundation, a trustworthy 'Groundwork of Psychology' for student or teacher."—*School World*.

**PSYCHOLOGY, A MANUAL OF.** By G. F. STOUT, M.A., LL.D. *Second Edition, Revised and Enlarged.* 8s. 6d.

"There is a refreshing absence of sketchiness about the book, and a clear desire manifested to help the student in the subject."—*Saturday Review*.

The student's task will be much lightened by the lucidity of the style and the numerous illustrative facts, which together make the book highly interesting."—*Literary World*.

The University Tutorial Series



# QUESTIONS ON LOGIC

A COMPANION TO WELTON'S MANUAL OF LOGIC

BY

H. HOLMAN, M.A. CAMB.

FORMERLY ONE OF HIS MAJESTY'S INSPECTORS OF SCHOOLS

AND

M. C. W. IRVINE, M.A. CAMB.

*Fifth Impression (Second Edition)*



LONDON: W. B. CLIVE

University Tutorial Press L<sup>o</sup>.

DRURY LANE, W.C.

BC108  
H6

MOFFITT

SB



## P R E F A C E.

---

THIS book is primarily intended as a companion to Mr. Welton's *Manual of Logic*; though, of course, the working of the exercises may accompany the reading of any other text-book on Logic. It is an endeavour to supply the material for that exercise in the practical application of logical principles which is almost indispensable to a thorough mastery of the science, and most helpful as an aid to, and test of, clear apprehension.

It is hoped that the *Hints* and *Examples* will supply such guidance as experience has shown to be useful to beginners.

The questions have been selected from a wide range of University examination papers, but chiefly from those set at the University of London, since the book is mainly designed for students preparing for the examinations of that University. More than one question has, in some few cases, been given on the same subject, either on the ground of the suggestiveness of the questions themselves, or as examples of the different styles of question adopted at different Universities.

A *Key* to the *Questions* is also published, in order that students may be able to test their answers—which is especially necessary in the case of problems in the more purely formal parts of the subject—and discover where, if at all, they have fallen into error.

I wish to express my indebtedness to my friend, Mr. Welton, for much invaluable advice and assistance, with regard to both the *Questions* and the *Key*.

H. H.

BURLINGTON HOUSE, CAMBRIDGE,  
November, 1891.

---

## PREFACE TO THE SECOND EDITION.

In the Second Edition changes required to bring the book into line with the Second Edition of Mr. Welton's *Manual of Logic* have been made, and the book has been completed by the addition of questions on Induction, Method, and Fallacies.

August, 1897.



## CONTENTS.



	PAGE
GENERAL SUGGESTIONS . . . . .	9
SUGGESTIONS ON WRITING ANSWERS . . . . .	12
INTRODUCTION. (a) Hints . . . . .	17
(b) Examples . . . . .	17
Questions on 'THOUGHT AND LANGUAGE . . . . .	19
Questions on DEFINITION AND SCOPE OF LOGIC . . . . .	20
Questions on RELATION OF LOGIC TO OTHER SCIENCES . . . . .	21
Questions on LAWS OF THOUGHT . . . . .	22
TERMS. (a) Hints . . . . .	24
(b) Examples . . . . .	24
Questions on Terms . . . . .	25
THE PREDICABLES AND CATEGORIES. (a) Hints . . . . .	29
(b) Examples . . . . .	29
Questions on The Predicables . . . . .	30
Questions on The Categories . . . . .	32
DEFINITION, DIVISION, AND CLASSIFICATION. (a) Hints . . . . .	33
(b) Examples . . . . .	34
Questions on Definition . . . . .	37
Questions on Division . . . . .	39
Questions on Classification . . . . .	41
REDUCTION TO PROPOSITIONAL FORM. (a) Hints . . . . .	42
(b) Examples . . . . .	43
Questions on Reduction to Propositional Form . . . . .	45
PROPOSITIONS. (a) Hints . . . . .	48
(b) Examples . . . . .	48
Questions on Propositions . . . . .	50
IMMEDIATE INFERENCES. (a) Hints . . . . .	57
(b) Examples . . . . .	57
Questions on Immediate Inferences . . . . .	60

	PAGE
SYLLOGISMS. (a) Hints . . . . .	65
(b) Examples . . . . .	66
Questions on Syllogisms . . . . .	68
Questions on Canons of Pure Syllogism . . . . .	69
Questions on Figure and Mood . . . . .	72
REDUCTION. (a) Hints . . . . .	75
(b) Examples . . . . .	75
Questions on Reduction . . . . .	76
MIXED SYLLOGISMS. (a) Hints . . . . .	78
(b) Examples . . . . .	78
Questions on Mixed Syllogisms . . . . .	80
ABRIDGED AND CONJOINED SYLLOGISMS. (a) Hints . . . . .	83
(b) Examples . . . . .	83
Questions on Abridged and Conjoined Syllogisms . . . . .	85
QUESTIONS ON FUNCTIONS OF THE SYLLOGISM . . . . .	86
POSTULATES OF INDUCTION. Hints . . . . .	88
Questions on Postulates of Induction . . . . .	88
GENERAL NATURE OF INDUCTION. Hints . . . . .	91
Questions on General Nature of Induction . . . . .	91
ORIGIN OF HYPOTHESES. Hints . . . . .	94
Questions on Origin of Hypotheses . . . . .	94
DEVELOPMENT OF HYPOTHESES. Hints . . . . .	96
Questions on Development of Hypotheses . . . . .	96
ANALYSIS OF THE GIVEN. Hints . . . . .	98
Questions on Analysis of the Given . . . . .	98
QUANTITATIVE DETERMINATION. Hints . . . . .	102
Questions on Quantitative Determination . . . . .	102
EXPLANATIONS OF THE GIVEN. Hints . . . . .	105
Questions on Explanations of the Given . . . . .	105
METHOD. Hints . . . . .	108
Questions on Method . . . . .	108
FALLACIES. (a) Hints . . . . .	111
(b) Examples . . . . .	111
Questions on Fallacies . . . . .	114
MISCELLANEOUS QUESTIONS . . . . .	118

## INDEX TO SOURCES OF QUESTIONS.



- A. . . . ABERDEEN UNIVERSITY.  
B. . . . BOMBAY UNIVERSITY.  
C. . . . CAMBRIDGE UNIVERSITY MORAL SCIENCES  
SPECIAL.  
C.—HONS. . . . CAMBRIDGE UNIVERSITY MORAL SCIENCES  
TRIPOS.  
CAL. . . . CALCUTTA UNIVERSITY.  
C.G.H. . . . CAPE OF GOOD HOPE UNIVERSITY.  
D. . . . DUBLIN UNIVERSITY.  
DUR. . . . DURHAM UNIVERSITY.  
E. . . . EDINBURGH UNIVERSITY.  
G. . . . GLASGOW UNIVERSITY.  
L . . . . LONDON UNIVERSITY.  
M. . . . MADRAS UNIVERSITY.  
MEL. . . . MELBOURNE UNIVERSITY.  
MCG. . . . MCGILL COLLEGE AND UNIVERSITY, MONTREAL.  
O.—MODS. . . . OXFORD UNIVERSITY MODERATIONS.  
O.C.M. . . . OWENS COLLEGE, MANCHESTER.  
R.U.I. . . . ROYAL UNIVERSITY OF IRELAND.  
ST. A. . . . ST. ANDREWS UNIVERSITY.  
ST. A.—L.L.A. . . . ST. ANDREWS UNIVERSITY LICENTIATE IN ARTS.  
V. . . . VICTORIA UNIVERSITY.



## QUESTIONS ON LOGIC.



### GENERAL SUGGESTIONS.

THIS book being specially designed as a companion to Mr. Welton's *Manual of Logic*, it is suggested that the following method of using it will be likely to render it most helpful:—

(1) That portion of the text-book which corresponds to the heading of the section of Questions should be thoroughly studied. The student is especially cautioned against anything like a superficial and unintelligent skimming of the author; this will only lead to the formation of inaccurate or inadequate conceptions of the subject in hand. The attempt to answer questions upon work so done will cause still further mischief, in that the act of committing ideas so gained to paper serves to impress them more deeply upon the mind, and the subsequent correction, if any, of them will be very unlikely to undeceive the student completely or to remove his false ideas. The following suggestions as to reading may prove of service to the inexperienced learner:—

(a) *Read slowly*; and, if necessary, re-read several times, till you are convinced that you have thoroughly grasped the author's meaning. Wherever possible, supplement the examples given in the text-book by some of your own, and analyse them so as to be quite sure of their relevancy. Where appeal is made to mental processes or experiences, always refer to your own for corroboration and illustration. Such endeavours will afford a good test of intelligent reading.

(b) *Memorize thoroughly.* In every science there is a certain amount of technical detail which has to be committed to memory; but the learner will find that he has, at first, to memorize a good deal more than this. Although one who has made an intelligent study of a subject has already done much of the memorizing, and so made much more easy and certain what remains to be done, yet this will never wholly obviate the necessity of further effort. The marginal summaries in Mr. Welton's book supply just the matter which should be memorized. By memorizing is meant, not the obtaining of the mere ability to repeat sentences in a given order, but the securing of such a vivid mental impression of the order and logical sequence of the parts of a subject that they can be reproduced in memory with facility, certainty, and accuracy. The repetition necessary to accomplish this will be found to involve much more than a mere mechanical reiteration; for the endeavour to secure a vivid impression of the arguments used, and the conclusions reached, will be likely to suggest new thoughts upon the subject, and to clear up any vagueness or uncertainty. Nothing is more unsatisfactory and disappointing to a learner than to find that, after reading carefully through a certain amount of book-work, he has, a few days after, entirely forgotten what he fondly imagined he had learnt. This can only be obviated by recognizing the need of, and taking means to secure, a sufficient amount of accurate memorizing.

(c) *Recapitulate.* This can be best done by closing the text-book and reproducing mentally, or in writing, a brief abstract of the arguments, or facts, or both, just studied. It may, with advantage, be done both immediately after having studied a portion of the author, and immediately before commencing the next portion. Then test—and correct, if necessary—this recapitulation by reference to the table of contents, or to the marginal summaries.

If these three points are conscientiously attended to, the student need have but little fear of not attaining a really satisfactory knowledge of the subject.

(2) The questions given on the subject-matter just studied should then be answered. It is important that the whole



of the portion studied should be reproduced, in answers to questions, before beginning to study a fresh subject. Two points should be observed in regard to the answers—

(a) They should be as full as possible, whilst rigorously avoiding all that is irrelevant, or mere verbiage.

(b) On no account should any reference to the text-book (or to the *Key*) be made, whilst writing them.

This second point should be insisted upon, or the student will delude himself into the idea that he is making progress, when, as a matter of fact, he is doing nothing of the kind.

(3) The answers should be corrected by an appeal to the solutions given in the *Key*. These solutions should *not* be “looked up” before the answer is written: such a method would fail to obtain any of the advantages of practice for examinations, or of a test of the knowledge and intelligence really acquired by previous study. Neither, therefore, should the questions be attempted immediately after studying a subject—the best discipline for such occasions has already been indicated (see *Recapitulation*). This point, of “looking up” the answers to questions before attempting to answer them, is an important one, and the learner will do well to allow himself no indulgence, under any circumstances whatsoever. The almost certain result of doing so, would be to make the exercise a mere mechanical effort of memory. There would be little, if any, obligation to make that serious study, and thorough intellectual assimilation, of the subject, which alone is either helpful or permanent. The object of writing answers to questions is to ascertain how far the student has “read, marked, learned, and inwardly digested” the subject-matter. The judgment required in selecting those parts of the work done which relate to a given question, and in synthesizing them into a logical answer, is the best test of intelligent study, and a really good mental discipline. A good general rule, as to the time for answering questions, would be to study a given subject one week, and answer questions on it during the next week, whilst also studying a fresh subject,—the two exercises would react upon, and assist, each other

## SUGGESTIONS ON WRITING ANSWERS.

It is well known, at least to those who have had any considerable experience in tuition, how unequal are the merits of written answers, as such, *i.e.* without regard to the amount of knowledge they express. Some are able to write an effective answer with a minimum of knowledge; others, with far greater knowledge, write very poor answers; whilst those who combine knowledge with the power of good expression are the brilliant exceptions. Though it is not possible to impart the secret of a brilliant literary style, if one is so fortunate as to possess it, yet it is possible to give such hints as shall guide a person in making the best and most effective use of his knowledge in answering questions in a written examination. The following points should be carefully attended to.

(1) Read the question very carefully, and endeavour to make quite sure that you have apprehended the real point of it. It will not, as a rule, take long to decide as to what the real point is; and even if it does take a minute or two to make sure of this, the answer will probably gain much by this delay, and will almost certainly lose by the contrary method. For example, in regard to the question, "Compare the following terms with respect to their definability, . . ." it is not a sufficient or satisfactory answer simply to say all that is known about their logical characteristics, or merely to point out which are connotative and which are non-connotative; and yet scores of such answers have actually been written in reply to such a question. The whole point of the question is: Indicate those terms which are more easily and fully definable than the others. This depends upon the relative predominance of connotation or denotation, in each case, and should be shown by arranging them in groups, if there are several of the same kind, of an increasing or decreasing degree of definability, and giving reasons for this order.

The whole question of relevancy or irrelevancy turns upon this preliminary consideration. The writing of a lot of miscellaneous matter, so as to fill up space, is worse than useless,—it is sure to create a bad impression on the

examiner's mind. The student may easily deceive himself by doing this, but he is not likely to impose upon the examiner, who may generally be credited with knowing something about the subject, and a good deal about the little plans for imposing upon his supposed credulity and complacency. As an example of irrelevancy the following may be given:—In answer to the question "Show how Mediate and Immediate Inference depend upon the Laws of Thought," many commence their answer by a statement, and full discussion of the Laws of Identity, Contradiction, and Excluded Middle. Now the *statement* of the Laws is perfectly relevant, but the detailed *discussion* of them is wholly out of place,—the mere statement of the Laws should, at least for present purposes, be taken as implying their acceptance after full discussion. The point of the answer should be to show the *dependence of Inference* upon these Laws. Examples of such errors of judgment might easily be multiplied.

(2) Endeavour to make your answer cogent, and exhaustive, without being verbose. This will be best secured by performing—

(a) An act of analysis, *i.e.*, pulling the question to pieces, so to speak, and seeing what, and how many, are the points to be stated, demonstrated, attacked, or substantiated; then,

(b) An act of synthesis, *i.e.*, building up the answer in logical order and sequence,—each step or argument naturally following from the preceding one—so that the total effect is cumulative and convincing. Thus, in dealing with such a question as "Has Logic any practical utility?" some such method as the following should be used:—(1) What is Logic? It is the science of the principles which regulate valid thought. [This should be explained in detail, so that we may know exactly what we are discussing.] (2) Does Thought need such regulative principles? Undoubtedly; the experiences of everyday life show us how liable we are to jump at conclusions, to draw false conclusions from true data: *e.g.*, a boy is accused of theft, he is embarrassed and evasive, therefore he is the thief—as a matter of fact, timidity, the mere thought that he is suspected, desire to shield another, etc., may be the cause of his confusion:

again, the superstitions, intolerance, cruelty, etc., of past times, considered in the light of present knowledge, are seen to be very largely the results of ignorance and prejudice, *i.e.*, of invalid reasoning. Many errors, dissensions, and strifes, are caused by the want of a clear apprehension of the meaning of a word, and a consistent logical use of such a meaning in argument—*cf.* such words as church, capital, faith, etc. [Such examples should be worked out in detail, so as to show clearly their bearing upon the point under discussion.] (3) Does Logic fulfil such a function? Certainly; it investigates and states the legitimate conclusions that may be drawn from given data; it demands clear and precise meanings of terms; and it supplies rules for testing and securing valid conditions for valid thought. Wherever, therefore, exact thought is desirable, Logic is of paramount importance; and it will hardly be contended that exact thought is ever superfluous or unnecessary. (4) The specific uses of Logic. [For a full discussion of these, see *Manual*, vol. i., pp. 13, 24.]

In such questions as are most concerned with the reproduction of book-work, *e.g.* a description or summary of some part of logical doctrine, the points to be aimed at are:—(1) clear and orderly arrangement; (2) full but concise treatment (*cf.* Example 2 of the Introduction, in this book).

To avoid verbosity is, practically, to avoid all paraphrase and repetition. Whatever can be said, clearly, in a sentence, should not occupy a paragraph. For example, if it were desired to express the judgment "Logic is a science, in that it systematizes our knowledge of the regulative principles of Thought," it would be pure verbosity to paraphrase this into "We have every right, in accordance with the general rules of thought and the usual practice in regard to the application of the conventional meaning of the term, to apply the name 'science' to that department of systematized knowledge (*i.e.*, of our acquaintance with facts and the antecedents which precede and produce them, reduced to series governed by a general law), which is generally known under the appellation of Logic, and is so called from the fact that this word 'Logic,' in its original form, signifies the thought which words express." The use of elaborate synonyms and

equivalent phrases should be avoided; *e.g.*, say "affirmation or denial," not "the assertion of congruence, agreement, or compatibility, or the assertion of incongruence, disagreement or incompatibility"; say "these things agree," not "these things may be said to be in agreement, *i.e.*, they are congruent one with another, or are not incompatible with each other." In brief, so long as neither clearness nor cogency are sacrificed, say what you have to say in as few words as possible.

(3) An example, or illustration, should be given wherever relevant. Thus, after making such an assertion as "Words with no definitely fixed meanings are unsuited for use as scientific terms," it will be well to exemplify by taking a word, such as "Labour," which may at different times and for distinct purposes, mean (1) manual labour, (2) wage-paid labour, and (3) any exertion, whether physical or mental; and so long as the word is not definitely limited to one or other of these meanings, a discussion concerning "Labour" will be true or false according as the *reader* supplies one or other of them. It will be obvious how much more is conveyed by such an example, given in support of the statement, than by the mere statement itself. There is also the fact that such a treatment is a pretty sure indication that the student has an intelligent grasp of the subject, and is not merely writing down remembered sentences and dicta. Probably the best rule for the general mental attitude to be assumed, in regard to the manner of answering a question, is to write as though demonstrating a fact or principle to a fairly intelligent reader who has little, if any, previous knowledge about the subject. Nothing should be assumed, *as to the immediate point of the question*, which is not definitely implied, or stated, in the question itself. Of course, the examiner will know all about such matters, but the object of the question is to find out *all* the *examinee* knows about it. In such a question as "Are the Laws of Thought all equally fundamental?" the ordinary statement of them should be taken for granted; but, in answering the question "What different statements have been given of the Law of Excluded Middle?" reasons should be given for accepting one of them as being the preferable form of statement.

(4) In the case of a written examination with a time limit, it is important to apportion the time according to the number of questions which can be answered satisfactorily. As a general rule, it is much better to answer as many questions as possible,—it would take a brilliant man to obtain 100 per cent. on a single answer, whilst an average man would probably be able to get 50 per cent. on each of two answers, in the same time. But it must be remembered that one good answer is better than two *bad* ones. The greater portion of the time allotted to a particular question should be devoted to elucidating the immediate point of it, not to labouring at or magnifying minor points.

It is not, of course, supposed that the above suggestions are the only ones that are of any use to a student. In the cases of some students, it is often found that anything like a formal and invariable method is rather a hindrance than a help. But, since such works as the present are meant for the guidance and assistance of the average intelligent worker, we need not take such exceptions into consideration,—and even in such cases we may say that as men reason the better if they have a knowledge of Logic, so they will study, and write, to more effect if they have a definite and intelligent Logical Method (*cf. Manual*, vol. ii., pp. 211-26) To those who have had but little experience in the habits of study, and in the committing of their thoughts to paper in the shape of answers to definite questions, and to those who find that they have not been making the progress they expected and desired, it is believed that the above hints will be useful,—and this belief is founded upon a very wide and lengthy experience of study and students.

## INTRODUCTION.

### HINTS.

1. Avoid simply reproducing the marginal summaries, or the summarizing sentences in the text. Demonstration, *i.e.* connected argument, not dogmatic assertion, is wanted.
2. Amplify and illustrate, wherever it is possible.
3. Do not be afraid to criticize, or to differ from, the author. But never do either unless you have a good reason to give for your own opinions.
4. Always bear in mind the plan suggested in the paragraphs on "Suggestions on Writing Answers."

### EXAMPLES.

1. Discuss the question of the Dependence of Logic upon Language.

Since Logic is directly concerned with thought, and thought is directly dependent upon Language for its capacity to develop its higher and more complex processes, Logic is evidently dependent, at least indirectly, upon Language. But we can go farther than this; for, given a language, as under present conditions, in which thought is expressed, and by which it is stimulated and advanced, we find that Logic depends upon Language for some of its subject-matter—in its objective form of terms and propositions.

From this dependence follows another, *viz.* that logical processes will be definite and precise in proportion as Language is clear and unambiguous. Many of the discussions and differences amongst logicians are solely due to the

ambiguities of language. As a matter of fact, logical processes are only possible upon the assumption that, at least for present logical purposes, the meaning of the language employed is clear and unmistakable. With regard to this point, it should be noted that Language gains very largely as to its clearness and precision, by the demand made by Logic for definite and unequivocal meaning. In so far, Language may be said to be dependent upon Logic.

Again Logic, in common with all the sciences, depends upon Language for its stability and progress : for its stability, in that language is the means of communicating logical doctrine, and in proportion as these doctrines are known and accepted do they become a part of the intellectual inheritance of men ; for its progress, in that language is the instrument of thought, and, as such, renders possible the higher generalizations of logical investigation, whilst, as an instrument for recording thought, it obviates the necessity for commencing our investigations *de novo*, and leaves the ground clear, for such as have capacity, to make deeper or wider researches.

But the most vital dependence still remains to be mentioned—viz., that without language we could have no science of Logic, or indeed any other science, at all. Without the means of recording thought, and the opportunity thus afforded of dealing with it objectively, it would be impossible for us to reduce our knowledge to a systematized and harmonious whole, governed by general principles, and capable of particular applications. We may say that language makes it possible for us to think about our thoughts ; and, since the province of Logic is to test and regulate the processes of thought, only so far as we are able to do this can we have any science of the regulative principles of valid thought.

We may therefore say that Logic depends upon language for (1) its existence, (2) a portion of its objective subject-matter, (3) its precision and clearness, and (4) its stability and progress. The relation is, however, a mutual one, for Logic is as important to the science of Language as to any other science.



2. Discuss fully the chief functions of Language.

For an answer to this see *Manual*, vol. i., pp. 3-5.

Notice carefully (1) the exhaustive analysis, based on the fundamental conception of the nature of Language; (2) the clear and full discussion of each point; (3) the evolution, so to say, of the discussion—given the power of analysing complex wholes, it becomes possible to abstract common properties and so to form Concepts; by using symbols (words) for these Concepts, the processes of Thought are abbreviated; then, with Thought-activity increased and accelerated, comes the desire for communicating with others, and this is effected by gesture, speech, or writing; lastly follows the permanent expression of thought by reducing our symbols (words) to objective form capable of being recorded; (4) the examples given, and the analysis of them, to demonstrate their bearing upon the point under discussion; and (5) the cogency and brevity of the language used.

## QUESTIONS.

### THOUGHT AND LANGUAGE.

*All questions marked by an asterisk relate mainly to those parts of the "Manual of Logic" which are printed in small type.*

1. "LOGIC cannot, therefore, begin more appropriately than with a brief examination of the nature of thought and of language, and of their relations to each other."

Give the reason for the above statement, and briefly indicate the dependence of thought and language on each other.

2. In what way is Language both a help and an impediment to Thought? [O.—MODS.]

3. To what extent is language requisite for Reasoning? [L.—M.A.]

4. Define Language; and determine what falls within the limits of the definition. [L.—B.A. HONS.]

5. Point out the main functions which Language performs. How is it that *spoken* language has become the only universal one amongst mankind? [L.—B.A.]

*W. Log. Q.*

6. Discuss the question of 'The Ambiguities of Language,' showing (1) how such ambiguities arise, and (2) how they should be checked. Give examples to illustrate your arguments.

7. Point out the generalization or specialization which has taken place in any of the following:—court, oil, foot, post, church, master, class, Commons, doctor.

8. Examine, in the case of some special example, the principal causes by which words become widely altered in their signification. With which of such causes has Logic most to do? [L.—M.A.]

#### DEFINITION AND SCOPE OF LOGIC.

9. Define Logic; and state what you consider to be its use in education. [O.—MODS.]

10. Discuss the question whether Logic is a Science or an Art, or both.

11. What is meant by saying that Logic deals only with the *form* of thought? Show how the use of symbols enables us to examine the form of our thought. [L.—B.A.]

12. Logic is sometimes said to treat of simple apprehension, judgment, and reasoning or discourse; sometimes of terms, propositions, and syllogisms. Which of these sets of expressions is preferable, and why? [O.—MODS.]

13\*. Inquire into the logical nature and importance of the operation called *Abstraction*. [L.—M.A.]

14\*. What are the logical factors involved in the formation of a Concept? What different views have been held as to the nature of a Concept?

15\*. Give the general view and divisions of Logical Science adopted by writers of different schools. [L.—M.A.]

16. Explain briefly what you understand by the term Inference.

17. Examine the distinction between the Form and Matter in Logic. Do you consider a purely Formal Logic to be possible? If so, show what the subjects are with which it can deal. [L.—M.A.]

18. When Logic is defined as 'the Science of the Laws of Thought,' what is meant by the words 'Science,' 'Law,' and 'Thought'? [O.—MODS.]

19. Define exactly what you understand by (1) Inductive, (2) Material, (3) Applied Logic, distinguishing each from its proper opposite. Do you regard them as commensurate or not? [L.—B.A. HONS.]

20\*. What do you understand by the assertion that Logic is an objective science? If not objective, what is it in your opinion? [L.—A.]

21. Analyse with precision the meaning of the name Science; and distinguish Science from Art, Knowledge, Practice. [L.—B.A. HONS.]

22\*. Distinguish Objective from Subjective Logic, giving the views of Hamilton, Mill, and Spencer on the subject. [L.—B.A. HONS.]

23. What is Logic? Discuss whether *language, thought, or objects* are its subject-matter. [DUR.—1ST YEAR.]

24. How may the disputes as to the definition of Logic be accounted for? [O.—MODS.]

25\*. What practical value may be attributed to Logic (1) in the detection of error, (2) in the discovery of truth? [O.—MODS.]

#### RELATION OF LOGIC TO OTHER SCIENCES.

26\*. How do you distinguish Logic from Metaphysics? Could the latter be validly construed as a branch of the former? If not, why not? Show the fundamental relation in which Logic stands both to Psychology and to Metaphysics. [L.—B.A. HONS.]

27. Discuss the relations of Logic to Psychology, Grammar, and Rhetoric. [L.—B. SC., O.—MODS.]

28. Why has Logic been called *Ars Artium*? With what sciences has Logic the closest relations?

29. Why, and in what manner, is Logic concerned with the use of Language? Distinguish accurately between the

Logical Proposition and the Grammatical Sentence, giving examples. [L.—B.A.]

30. Explain fully and illustrate the difference between the Logical, Rhetorical, and Grammatical aspects of a sentence. How does Logic deal with Verbs, Adverbs, and Conjunctions? [O.—MODS.]

### THE LAWS OF THOUGHT.

31. Enunciate, in the form that seems to you most suitable from the point of view of logical theory, the primary laws or axioms of thought, and discuss their relation to the process of reasoning. [L.—B.A.]

32\*. Examine carefully the different views taken with respect to the nature and sources of the Axioms of Contradiction and Excluded Middle. [L.—M.A.]

33\*. On what laws or principles does Deductive Logic rest? Does the investigation of their nature and origin come within the province of the Science? [L.—B.A. HONS.]

34\*. Examine the question whether the Principle of Identity is mere tautology.

35\*. Express the Laws of Thought as now commonly accepted; consider in what sense they are to be called Laws, and whether they have all the same right to be so called. [L.—M.A.]

36. State the Law of Sufficient Reason, and discuss its logical place and value. [L.—B. SC.]

37\*. Discuss (1) Hamilton's Postulate, and (2) Mathematical Axioms; and show their relation to the Laws of Thought.

38\*. Mention some of the different senses in which the Law of Identity has been interpreted.

Examine the following statements:—

(a) The Law of Identity is the principle of all logical affirmation.

(b) Since all thought is either of pure difference or of identity with difference, we cannot, in a strict sense, think the Law of Identity at all.

(c) The axiom that all things that are equal to the same thing are equal to one another, is merely another statement of the Law of Identity. [C.—HONS.]

39\*. Are the laws of Identity, Contradiction, and Excluded Middle, all equally fundamental and independent? [C.—HONS.]

40. What do you understand by a Law of Thought? If the laws of thought are uniformities, how does it happen that we ever reason fallaciously? [L.—B.A.]

## TERMS.

### HINTS.

1. THE student is specially cautioned against classifying *Terms* as Categorematic and Syncategorematic. A Categorematic Term is a term-term—an unnecessary and absurd repetition—whilst a Syncategorematic Term is a not-term term—which is a contradiction in terms. Categorematic and Syncategorematic apply only to the classification of *Words*.

2. The first point to be decided, in every case, is whether the word is equivocal; if it is, there are really two or more terms, and the case should be so treated.

3. Great care should be taken in deciding whether Abstract Terms are Singular or General. If they are General, they are also, and only then, Connotative—for all General Terms are connotative (see *Manual*, pp. 52, 75).

4. Relative Terms often cause difficulty. The important point to remember is that the meaning of a Relative Term necessarily implies the existence of another term relating to the same fact, or facts (see *Manual*, vol. i., pp. 76-7).

*Note.*—A Syncategorematic word may be made the subject of a sentence by a *suppositio materialis*, that is, by regarding the word itself as a thing: e.g., *Only* is an English word.

### EXAMPLES.

1. Give all the logical characteristics of the following terms:—lame, crowd, colour, son, equation, unholy, ant, Lord Shaftesbury, the tallest man alive, the Lord Chancellor, non-Christian.

*Lame.*—Univocal, general, connotative, privative, concrete, absolute.

*Crowd.*—Equivocal :  $\left\{ \begin{array}{l} 1. \text{ A press of people.} \\ 2. \text{ An old violin.} \end{array} \right.$   
 $\left\{ \begin{array}{l} 1. \text{ general (collective),} \\ 2. \text{ general,} \end{array} \right. \left\{ \begin{array}{l} \text{connotative, positive} \\ \text{concrete, absolute.} \end{array} \right.$

*Colour.*—Univocal, general, connotative, positive, abstract, absolute.

*Son.*—Univocal, general, connotative, positive, concrete, relative.

*Equation.*—Equivocal :  $\left\{ \begin{array}{l} 1. \text{ Denoting equality, or the} \\ \text{action of making equal.} \\ 2. \text{ Signifying a mathematical for-} \\ \text{mula.} \end{array} \right.$

1. Singular, non-connotative, positive, abstract, absolute.

2. General, connotative, positive, concrete, absolute.

*Unholy.*—Univocal, general, connotative, privative, concrete, absolute.

*Ant.*—Univocal, general, connotative, positive, concrete, absolute.

*Lord Shaftesbury.*—Univocal, singular (proper), non-connotative, positive, concrete, absolute.

*The tallest man alive.*—Univocal, singular, connotative, positive, concrete, absolute.

*The Lord Chancellor.*—Univocal, singular, connotative, positive, concrete, absolute.

*Non-Christian.*—Univocal, general, connotative, negative, concrete, absolute.

## QUESTIONS.

41. Define (1) Name, and (2) Term. Does Logic distinguish between them? Are Names the names of Things, or of Ideas?

42. Give a classification of Words, and say if this will also apply to Terms. Give your reasons fully.

43. What is the logical difference, if any, between Nouns Substantive and Nouns Adjective? [L.—B.SC.]

44. Discuss the grammatical parts of speech from a logical point of view.

45. Classify Names for the purposes of Logic; and give examples of each class. [L.—B.A.]

46. Which of the usual divisions of Terms do you consider of fundamental significance in logical theory? Give your reasons. [L.—B.A.]

47\*. Is there any distinction to be drawn between Singular and Proper Names? What views are or may be held as to their being mere unmeaning marks in Logic? [L.—M.A.]

48. Describe the nature of *Collective* Terms; examining in particular any difficulties in distinguishing these and general or abstract terms. [C.—HONS.]

49. What is understood by a Proper Name? In what other ways than by a proper name can an individual object be referred to? [C.]

50. Define what you understand by the Connotation and Denotation of a Term? What determines the Connotation and Denotation of Terms? Have all terms a denotation and a connotation?

51. Explain what is meant by Connotation of a name: has it any connection with the etymology of the name? [C.]

52\*. What principles are to be followed in endeavouring to give a fixed connotation to a term whose meaning is vague? [MEL.]

53. Proper names are not connotative according to Mill. Why? This view is probably erroneous, according to Mr. Jevons. Are all Singular and Abstract names connotative? [D.]

54\*. Is Connotation an objective or subjective matter? Does it involve absolutely complete knowledge?

55. Explain exactly the statement "As the intension of a term is increased, the extension is decreased," and give illustrations of it. [C.]

56. Discuss the question whether there are (1) terms whose denotation may increase without any change in the



connotation; (2) terms whose connotation may increase without any change in the denotation.

57. Distinguish between Positive, Negative and Privative names. Of what kind are the following names, and why, —parallel, alien, idle, unhappy?

What ambiguity is there in the use of such a name as “not-white”? [C.]

58. What kind of terms would you use, and why, to express (1) Contradiction, (2) Contrariety, and (3) Repugnance? Give examples.

59. Is the division of Names into Abstract and Concrete logically important; and is it an exhaustive division of names?

What use do logicians make of their division of Names into Relative and Absolute? [C.—HONS.]

60. Give the logical characteristics of: organism, force, nationality, His Eminence, our American Cousin, monopoly, The Renaissance, the judicature. [MCG.—INT. B.A.]

61. Explain the distinction between Concrete and Abstract Names. Does this distinction correspond to that between Substantives and Adjectives? [L.—B.A.]

62. Explain and criticise the following statement:—“The greater the comprehension of a concept, the less is its extension; the greater its extension, the less its comprehension.” [L.—B.A.]

63. Explain the difference of Denotation and Connotation with reference to the terms Law, Legislator, Legality, Crime. [L.—B.A.]

64. Give a careful explanation of the nature of Relative Notions, and Relative Terms. [L.—B.SC.]

65\*. “The doctrine of Terms is really a composite and for the most part extra-logical body of doctrine.” Examine this statement and consider the differences that ensue according as this body of doctrine is regarded as treating of (1) concepts, (2) terms, or (3) classes. [L.—M.A.]

66. Examine carefully the grounds for the distinctions that have been drawn between Concrete and Abstract terms, and consider whether differences of quantity are to be recognised in both cases. [L.—B.A. HONS.]

67. Explain and illustrate the following terms:—Abstract, Concrete; Possessive, Privative; Equivocal, Univocal; Contrary, Contradictory; Essential, Accidental.

[L.—M.A.]

68. Describe the logical characters of the following terms:—Equal, equation, equality, equalness, inequality, and equalisation.

[L.—B.A.]

69. Discuss the question whether the following terms are respectively connotative or non-connotative:—Westminster Abbey, the Mikado of Japan, Barmouth.

[L.—M.A.]

70. Arrange the following terms in order of extension:—vertebrate, human, animal, substance, child, organism, schoolboy.

71. Classify the following:—chemist, chemical, black, paper, in, Liverpool, monkey, alas, cheese, sublimity, and, annoyance, sincere, deaf, a-never-to-be-forgotten, volition, darkness, non-combatant, foot, Buffalo Bill, the Wild Man of the West.

72. Give three examples of each of the following: connotative abstract names, connotative singular names, general abstract names, collective general names, relative names, equivocal names; and give reasons for regarding them as such.

73. Point out the ambiguity, if any, of the following terms, and say what you know of the origin of such ambiguity:—bill, term, peer, oxygen, sense, ball, order, minister, teapot, interest, paper, stamen, class.

74. What is meant by Denotation and Connotation? What logical processes are meant to give them exactness?

[O.—MODS.]

75. On what principle may terms be logically divided?

[O.—MODS.]

76. What help does Logic give towards a correct understanding of (1) the connotation of terms, (2) the extent of their application?

[O.—MODS.]

## THE PREDICABLES AND CATEGORIES.

### HINTS.

1. It is always understood that Porphyry's five-fold scheme of Predicables is referred to in a question, when the opposite is not distinctly stated.

2. In a proposition which has Singular Terms for Subject and Predicate there is no Predicable relation, *e.g.* "Edinburgh is the modern Athens." Here the Subject and Predicate terms are merely synonyms, and can, therefore, have no relation of dependence. The sentence can be reduced to the Verbal Proposition, "Edinburgh and the modern Athens, are names of the same place;" where the Predicate (names of the same place) stands in the relation of species to the Singular Subject.

3. Since the relations of the Predicables to one another rest ultimately upon material considerations, accuracy in these matters will depend mainly upon the extent and precision of the student's general knowledge.

It will be advisable to always give a reason for a decision as to what is the relation of the predicate to the subject, as a check upon oneself, and an indication to the examiner of the grounds of the decision.

4. With regard to the Categories, Aristotle's and Mill's schemes, and the criticisms on them, should be thoroughly mastered.

5. A Species cannot be predicated of a Genus, since the added attributes of the species would be incompatible with the wider range of the genus.

### EXAMPLES.

1. To which of the Predicables does each of the following predicates belong?—

(a) A proper Fraction is one whose numerator is less than its denominator.

The predicate here is a Differentia, since it distinguishes

the species Proper Fraction from the other species of the genus Fraction.

(b) Even men are animals.

Here the predicate is a Genus, of which the subject is a species, *i.e.* man is a sub-class of the wider class animal.

(c) Logic is a good mental discipline.

Since Logic is a science, and all sciences, being systematized knowledge, afford good mental discipline, this predicate indicates an attribute that necessarily follows from the connotation of the term ; it is, therefore, a Proprium.

(d) Englishmen are keen sportsmen.

Although this is doubtless true, yet it is neither a necessity from the nature of Englishmen, nor necessarily permanent. Hence this predicate is a Separable Accidens of the subject.

(e) All negroes are woolly haired.

We have here an attribute which always does accompany the object named, but we know no reason why it should. The predicate is, therefore, an Inseparable Accidens of the subject.

2. Give the Genus, the Differentia, a Proprium, and an Accidens of :—affirmative proposition, virtue, perception.

	GENUS.	DIFFERENTIA.	PROPRIUM.	ACCIDENS.
Affirmative proposition.	Proposition.	Asserts possession of an attribute.	Predicate undistributed.	Singular (Separable).
Virtue.	Conduct.	Exceeds strict duty.	Gives moral pleasure.	Gains respect (Inseparable).
Perception.	Consciousness.	Immediate result of objective stimulus.	Gives knowledge.	Painful (Separable).

## QUESTIONS.

### PREDICABLES.

77. Give some account of the Predicables. How may they be adjusted to modern thought? [DUR.—B.A. HONS.]

78\*. In what respects is Aristotle's classification of the

Predicables superior to the ordinary one? How may we suppose each of the two was arrived at? [O.—MODS.]

79. Comment upon the following:—‘Genus is a part of species, species is a part of Genus.’ [O.—MODS.]

80. Define ‘Differentia,’ ‘Property,’ and ‘Inseparable Accident.’ How far may these distinctions be interchanged? [O.—MODS.]

81\*. Explain briefly in themselves, and in relation to their former philosophical foundations, the meaning of ‘summa genera,’ and the use of the Porphyrian tree.

[L.—B.A. HONS.]

82. Enumerate the Predicables; and interpret them where possible, (1) in comprehension, (2) in extension. Give examples of each. [E.—M.A.]

83. What do you understand by (1) an Analytic Proposition, (2) a Synthetic Proposition? Classify the following according to this distinction:—

A horse is a beast of burden.

An oak is a tree.

84. Give three examples of terms standing to one another in the following relations:—genus and species, species and accidens, species and proprium, differentia between genus and species.

85. To which of the Predicables would you refer the predicates in the following, and why?—

(1) All the angles of a square are equal.

(2) Lord Shaftesbury was a great philanthropist.

(3) All ducks are web-footed.

(4) Most Englishmen are brave.

(5) A triangle is three-sided.

(6) All republics are governments.

86. Give the Genus, the Differentia, a Proprium, and an Accidens of:—gold, Darwinian, rhombus, house; and say why you choose what you give in your answer.

87. Name the five heads of Predicables. In the operations of natural science, which of these heads holds the most prominent place? [O.—MODS.]

88. In each of the following sentences point out the

predicate, and refer it to the head of predicables to which it belongs :—

- (1) Alkalies by their union with acids form salts.
- (2) The tiger is a predatory animal.
- (3) Some governments rest upon force.
- (4) James ruled oppressively. [O.—MODS.]

#### CATEGORIES.

89\*. What do you consider to be the nature and use of Categories in Logic? Compare the views of Mill, on this subject, with those of any other writer. [C.—HONS.]

90. Discuss the object and utility of Mill's classification of the Categories. Under which head in his classification would you place each of the following :—the Nineteenth Century, the Church of England, force, Logic, reputation? [C.—HONS.]

91\*. How does Kant criticise the Categories of Aristotle? In what does his own doctrine differ from that of Aristotle? [L.—B.A. HONS.]

92. Enumerate the Categories of Aristotle, and briefly comment on them, noticing Mill's criticisms and Bain's vindication. [D.]

93\*. Say what you know of any schemes of Categories other than those of Aristotle, Kant, and Mill.

94. Examine the various classifications of existing things which have been proposed by different logicians. Why are such classifications introduced into logical treatises? [B.—M.A.]

95. What different views have been entertained as to the purpose of the Aristotelian Categories? What was the distinction between First Substance and Second Substance? [M.—M.A.]

96. 'The Categories originally belong to Grammar rather than to Logic.' How has it been attempted to give them an intelligible place in a system of Logic? [O.—MODS.]

97. Criticise (1) the Predicables and (2) the Categories (or Predicaments) as examples of classification. [O.—MODS.]

## DEFINITION, DIVISION, AND CLASSIFICATION.

As each of these processes depends mainly upon material considerations, the student's ability to answer many of the questions will be limited by his general knowledge.

### HINTS

#### DEFINITION.

1. Remember that only (1) Proper Names, and (2) Singular Abstract Terms, are undefinable; and that those Terms whose Connotation is their more prominent element are more definable than others.

2. Always define *per genus et differentiam*. If not quite sure as to the proximate genus, give what you believe it to be, and add a note as to your uncertainty—it is very improbable that a student will know enough about every term which may be submitted to him to avoid the necessity for some such qualifying admission. The same remark applies to the differentia—except perhaps in the case of purely scientific terms.

3. In deciding whether a proposition constitutes a valid Definition—(1) determine whether it really sets forth the *connotation*, and nothing else, of the subject-term, and (2) whether it does so in conformity with the Rules of Definition.

4. Equivocal or Ambiguous Terms should be referred to the different genera to which they belong, and defined accordingly—*i.e.*, as two or more terms.

5. The processes somewhat resembling Logical Definition should be carefully noted (see *Manual*, vol. i., pp. 121-2, iv).

6. The definability of terms is great in proportion as their connotation is fixed and definite.

7. Notice that whenever an attempt at real Definition is faulty, Rule I is broken.

#### DIVISION.

1. In testing a Division the chief point to be considered is whether there is more than one basis of Division. It will often be the case that the student will be unable to test directly whether the Division is (1) exhaustive, and (2) proximate—since this implies complete knowledge of the subject matter.

2. In making a Division, whether Formal (*i.e.* dichotomous) or Material, the student will do well—unless he is quite sure of his knowledge of the subject—to indicate the limitations under which the answer is given.

3. Logical Division must always stop at the smallest groups (*infima species*)—to attempt to divide further would be *enumeration*, and not logical division.

4. Note carefully those processes which resemble Logical Division (see *Manual*, vol. i., p. 126).

5. It must be carefully noted that the Rules of Division are the fundamental rules for Classification, and should always be included in the latter (see *Manual*, pp. 127, 137, 141).

#### EXAMPLES.

##### DEFINITION.

1. Define the terms—anger, bread, mountain, poverty, ball.

*Anger*—is an emotion (genus) involving aversion and the desire to remove the cause of it (differentia).

*Bread*—is a food (genus) consisting of cereal flour which has been moistened and kneaded, and then baked (differentia).

*Mountain*—is an elevated portion of the earth's surface (genus) considerably above the general level of the surrounding country (differentia).

*Poverty*—is a social condition (genus) marked by the possession of little wealth (differentia).

*Ball*—(1) any thing (genus) having a spherical shape



(differentia). (2) A social entertainment (genus) at which those present dance (differentia).

2. Test the following definitions:—

(a) A dog is a domestic animal.

This is not a definition at all, for the words “domestic animal” are merely an accidens of dog. We have, therefore, a vague description of the thing, but no explication of the connotation of the word. It breaks Rule I.

(b) A pump is a water-raising machine, worked by a handle.

The genus is correct. The phrase “worked by a handle” is too narrow—it excludes steam pumps, etc. A separable accidens is given instead of the true differentia, which is “worked by a piston and valves.” This breaks Rule I.

(c) A politician is one who serves his country in order that he may serve himself.

This is a figurative description of a thing, and not the explication of the meaning of a term. It is, therefore, not a definition.

It is also ambiguous: it may mean (1) that the politician is influenced by purely selfish motives, or (2) that he simply regards himself as one amongst the many who gain by political institutions. It breaks Rules I and II.

(d) A poet is an apostle of sweetness and light.

This is a figurative expression, which, unless the hearer is used to its metaphorical application, would convey little, if any, meaning; and certainly would not indicate what a poet really is. Breaks Rule I and II. It is not definition [*cf.* (c)].

(e) A scribe is a writer.

In this sentence the subject and the predicate are identical terms—the former being the Latin form, and the latter the English. It breaks Rules I and III.

(f) Tranquillity is the absence of unrest.

This simply says what ‘tranquillity’ is not, not what it is. It still remains to give the connotation. This breaks Rules I and IV.

(g) A Noun is a word which is the name of a thing.

Correct; it gives the genus “word,” and differentia “name of a thing.”



(h) A soldier is a brave man who is ready to die for his country.

This is not a definition at all, but a distinctive explanation.

(i) A giraffe is a quadruped which feeds on the foliage of trees, and has long fore-legs and a very long neck.

This is a description.

(j) Lions are like the animal in this picture.

This is a kind of description by type.

3. Compare the following terms in regard to their definability:—Volition, sweetness, planet, iron, horse, negro, cow, syllogism, proposition, chair, pleasure, oxygen, pinnatifid, equality, book.

The definability of terms is great in proportion as their connotation is precisely fixed.

(i) Oxygen, pinnatifid, syllogism, proposition, iron, planet—being technical scientific terms, have each a definite connotation which can be precisely stated. Their genus and differentia can be exactly stated by scientists.

(ii) Negro, chair, book—represent species whose differentia, though generally recognized, cannot be stated with such precision as that of scientific terms.

(iii) Horse, cow—the differentia in regard to these is still more vague than in those of (ii).

(iv) Volition, pleasure—being the names of ultimate principles, only admit of paraphrase in other, or simpler, words.

Sweetness, equality—being singular abstract terms, admit of no definition whatever, *i.e.* have no connotation.

#### DIVISION.

1. Test the following divisions:—

(a) Churches into gothic, episcopal, high, and low.

There are three bases of division here:—(1) style of architecture, (2) government, and (3) dogma. It thus breaks Rule I. The division is not exhaustive—it neither takes account of (1) all styles of architecture, (2) all forms of church government, or (3) all differences of dogma. It therefore breaks Rule II. Notice that the terms gothic, high, and low, are ambiguous.

(b) Plants into stem, root, and branches.

This is physical partition.

(c) Plane figures into curvilinear and rectilinear.

This is a correct logical division. It has one *fundamentum divisionis*: the nature of the boundary; and it is exhaustive, since every plane figure must be either curvilinear or rectilinear, or a mixture of these.

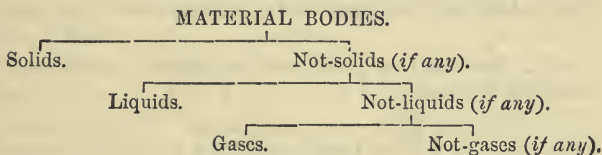
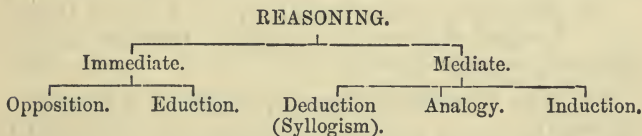
(d) Mind into Feeling, Thinking, and Willing.

This is metaphysical analysis.

(e) Men into white and black, rogues and murderers.

This has more than one basis of division, viz., colour and morality, and it, therefore, breaks Rule I. It is also, obviously, incomplete, and thus breaks Rule II.

2. Give a Logical Division of (a) reasoning, (b) material bodies.



## QUESTIONS.

### DEFINITION.

98. Explain the doctrine of Logical Definition, and estimate its value as an instrument of science. [L.—B.SC.]

99. What do you understand by "Definition per genus et differentiam"? Give examples.

100\*. Does the definition of a name in all cases include all the common properties of the class named? If not, can you determine any principle or principles on which certain

of the common properties should be selected, rather than others, for inclusion in the definition?

Take, as examples, parallel straight lines, ruminant animal, oxygen. [C.—HONS.]

101\*. What is the process of forming a Definition according to the old logical account? and what do you consider to be the modern scientific view? What are the difficulties in the way of framing a final and complete Definition of any term? [C.—HONS.]

102. Examine the value of controversies on Definition in Science, exemplifying your remarks from either the Natural or the Moral Sciences. [C.]

103. What is a Definition? Why is it that some names can, and others cannot, be defined? [O.—MODS., C.]

104. State the currently accepted rules of logical Definition. Examine their worth, and discuss the view that all definitions are of names only. [L.—B.SC.]

105. Why is Definition often a question not of words but of things? [L.—M.A.]

106. Distinguish Complete from Incomplete Definition. [L.—M.A., B.SC.]

107\*. Discuss the place and function of Definition in Scientific Method. [C.]

108. Explain what you understand by (1) a Nominal Definition, (2) a Real Definition, (3) a Genetic Definition.

Discuss the following:—"The characteristics by which a given object may be distinguished from all others are not to be confounded with the essential attributes of a concept: for the former it might suffice to call a man a featherless biped; to ascertain the latter is the aim of Definition."

[L.—B.A. HONS.]

109. Distinguish exactly between the Definition and the Description of a class. How many kinds of definitions did the Scholastic logicians recognise? [L.—B.A. HONS.]

110. State, and discuss, the different kinds of so called Definition that you know of.

111. Is it possible to define the terms—gold, coal, legal-nuisance, civilisation, Cleopatra's Needle? [L.—B.A. HONS.]

112\*. What difficulties attend the process of defining the names of material substances, of sensations and emotions; and how may they best be overcome? Illustrate your answer by examples. [O.—MODS.]

113. 'Definition must be both the starting-point and also the end and aim of all thinking.' How do you understand this statement? [O.—MODS.]

114\*. What are the principal faults in Definition? Give examples. [O.—MODS.]

115. What different answers are given to the question—What are the limits of Definition? Account for the divergence of view on this point. [O.—MODS.]

116\*. What is Definition? Is it of Names or of Things? [DUR.—B.A.]

117. Compare the definability of the following terms:—book, square, dulness, Victoria, being, exogens, thermometer, house, brilliancy, the present Chancellor of the University of London, Cambridge, cart, this ear.

118. Compare the following terms in respect of their definability:—rectangle, motive, copper, brass, tree, table, marriage, theft, feeling, substance. [L.—B.A. HONS.]

119. What qualities are included in the definition of a term? What is meant by saying that our definitions are provisional? [ST.A.—LL.A., HONS.]

120. Criticize the following definitions:—

- (1) Ignorance is a blind guide.
- (2) Ignorance is lack of knowledge.
- (3) Alcohol is a kind of medicine.
- (4) Blackguard is the opposite of honourable.
- (5) Enjoyment means pleasure.

#### DIVISION.

121. Give a definition of Division, and say whether you think it a Formal or a Material process. What other processes must it be carefully distinguished from?

122. Give the rules of Logical Division; and give instances which observe and violate them. [O.—MODS.]

123. What do you understand by "Division by Dichotomy"? Give examples, and say what objections are urged against it. Is it a purely formal process? and what is its utility?

124. Comment upon the following divisions:—

(a) Pens into steel pens and quill pens.

(b) Ireland into Ulster, Connaught, Leinster, and Munster.

(c) Animals into vertebrate and invertebrate.

(d) Material bodies into solids, liquids, and gases.

(e) Colour into whiteness, blackness, and blueness.

(f) Lights into artificial, blue light, white light, and moonlight.

(g) Vice into an immoral act, and a mechanical instrument.

(h) Englishmen into rich and poor, consumptive and bilious.

125. Give a Logical Division of the following:—plane, rectilinear figure, proposition, book.

126. Show that Division belongs to applied Logic, and has no place in a purely formal system. [O.—MODS.]

127. Explain the use of Division in Logic. Give the rules of Division, with examples in which these rules are violated. [O.—MODS.]

128. Are Definition and Division both necessary to the full understanding of the meaning of a term? Give reasons for your answer. [O.—MODS.]

129. Explain 'Fundamentum Divisionis,' and 'Cross Division'; and give examples of each. [O.—MODS.]

130. Define and Divide 'inference' and 'virtue'; and show that your definitions and divisions conform to the rules of definition and division. [O.—MODS.]

131. Criticize the following divisions:—

(1) North America into Canada, the United States, and Mexico.

(2) Terms into Singular, General, Abstract, and Concrete.

- (3) Books into bound, and unbound.
- (4) A piece of lime into whiteness, solidity, weight and extension.
- (5) A person into bones, flesh, feeling, and will.
- (6) Charm into 'sweetness of manner,' and 'an incantation.'
- (7) Man into civilized, uncivilized, clergyman, and layman.

132. Distinguish, from a logical point of view, between a specific and an accidental difference in any two things.

How far are the rules of Logical Division and Definition of use in actual science? [L.—B.SC.]

133\*. Discuss any system of purely formal Division that you know of.

#### CLASSIFICATION.

134. Explain what is meant by Classification, and show what excellencies a classification should have, and to what faults it is liable. [O.—MODS.]

135. State, and discuss, any special rules that may be needed for Classification.

136. Explain the expressions: "Classification by types," "Classification by series."

137. Illustrate, from any science you may know, the nature and uses of a Descriptive Terminology, and a Nomenclature. [L.—B.A.]

138. Discuss the appropriateness of the terms Natural and Artificial as applied to Classification.

139. Show how Classification grows out of Logical Division.

140. Of what use in Classification is a Scientific Language?

141. Give examples of Artificial Classifications, and show their uses.

142. Show the connexion of Classification and Definition.

143. What is Scientific Classification? What are the chief difficulties that attend it? [O.—MODS.]

## REDUCTION OF SENTENCES TO PROPOSITIONAL FORM.

THIS is a most important subject, and should be carefully studied,—to secure facility and accuracy in turning the statements of ordinary language into logical propositions. Many who are able to deal accurately with all the forms of Immediate Inference, when sentences are given in strict logical form, are often unable to express ordinary language in logical propositions, and are thus liable to go utterly wrong on questions involving such translation of language.

### HINTS.

1. The Logical Copula is the verb “to be.” Always, therefore, obtain “is,” “is not,” “are,” or “are not,” as the copula of a proposition (see *Manual*, vol. i., pp. 157-8).

2. Be very careful in deciding which is the Subject-term. Remember that in an **A** proposition, the Subject is distributed and the Predicate undistributed, so that if these are misplaced all Immediate Inferences will be invalid (see *Manual*, vol. i., pp. 158-60).

3. The following should be thoroughly memorized:—

(i) <i>All are not</i>	}	= Some are not. . . . .	(O.)
<i>Every . . . is not</i>			
(ii) <i>Any</i>	}	= Every. . . . .	(A.)
(iii) <i>Few are</i>			
	}	= Some (most) are not . . .	(O.)
<i>Few are not</i>			
(iv) <i>A few are</i>	}	= Some (few) are. . . . .	(I.)
<i>A few are not</i>			
(v) <i>Hardly any are</i>	}	= Some (most) are not. . .	(O.)
<i>Scarcely any are</i>			
<i>Hardly any are not</i>			
<i>Scarcely any are not</i>			
		= Some (most) are. . . . .	(I.)



- (vi)  $\left. \begin{array}{l} \text{Only } S\text{'s are } P \\ S\text{'s alone are } P \end{array} \right\} = \left. \begin{array}{l} \text{(i) Some } S\text{'s are } P \\ \text{(ii) No non-}S\text{'s are } P \end{array} \right\} = \text{All } P\text{'s are } S. \text{ (A.)}$
- $\left. \begin{array}{l} \text{Only some } S\text{'s are } P \\ \text{Some } S\text{'s alone are } P \end{array} \right\} = \left. \begin{array}{l} \text{(i) Some } S\text{'s are } P. \quad . \quad . \quad . \quad \text{(I.)} \\ \text{(ii) Some } S\text{'s are not } P. \quad . \quad . \quad . \quad \text{(O.)} \end{array} \right\}$
- $\left. \begin{array}{l} \text{Only } S\text{'s are not } P \\ S\text{'s alone are not } P \end{array} \right\} = \left. \begin{array}{l} \text{(i) Some } S\text{'s are not } P. \quad . \quad . \quad . \quad \text{(O.)} \\ \text{(ii) All non-}S\text{'s are } P. \quad . \quad . \quad . \quad \text{(A.)} \end{array} \right\}$
- $\left. \begin{array}{l} \text{Only some } S\text{'s are not } P \\ \text{Some } S\text{'s alone are not } P \end{array} \right\} = \left. \begin{array}{l} \text{(i) Some } S\text{'s are not } P. \quad . \quad . \quad . \quad \text{(O.)} \\ \text{(ii) Some } S\text{'s are } P. \quad . \quad . \quad . \quad \text{(I.)} \end{array} \right\}$
- (vii)  $\text{All } S\text{'s except one are } P = \left. \begin{array}{l} \text{(i) Some (most) } S\text{'s are } P. \quad . \quad \text{(I.)} \\ \text{(ii) Some (one) } S \text{ is not } P. \quad . \quad \text{(O.)} \end{array} \right\}$
- $\text{No } S\text{'s except one are } P = \left. \begin{array}{l} \text{(i) Some (most) } S\text{'s are not } P. \quad \text{(O.)} \\ \text{(ii) Some (one) } S \text{ is } P. \quad . \quad . \quad \text{(I.)} \end{array} \right\}$

See *Manual*, vol. i., pp. 173-6, 179-80.

4. Complex and Compound sentences must be first resolved into their constituent parts (see *Manual*, vol. i., pp. 176-80).

5. Always endeavour to reduce to a proposition having an adjective, or adjective phrase, as predicate—to show the predicative force of the proposition (see *Manual*, vol. i., pp. 159, 197-8).

N.B.—In this section the Copula is always italicized, so as to indicate (1) the Subject,—all that comes before the Copula, (2) the Copula, and (3) the Predicate,—all that follows the Copula.

### EXAMPLES.

1. All those present had not tickets.

Here the obvious purpose of the sentence is to suggest the assertion 'some (at least) had not tickets.' The use of "all" is simply for emphasis. The strict logical form is:—Some (persons) present *are not* possessed of tickets. (O.)

2. Some only who praise virtue act virtuously.

"Some only (do)," clearly implies that there has been an observation of cases in which "some do not," or there would be no justification for limiting the assertion to "some *only*." The logical force, therefore, is:—

(i) Some who praise virtue *are* virtuous. (I.)

(ii) Some who praise virtue *are not* virtuous. (O.)

3. None who were there failed to applaud.

This in logical form is:—None present *are non-applauders*. (E.) Such propositions, having negative copulas (see *Manual*, pp. 162-3) and predicates, are best expressed by

omitting the negatives, which counteract each other, *e.g.* All present *are* applauders (A.) [see *Manual*, vol. i., pp. 251-4, Obversion], which may be taken as the strictly logical form of the proposition.

4. Among the sights of London, the visitor should not miss St. Paul's Cathedral.

This is best expressed, logically, by:—St. Paul's Cathedral *is* worthy to be seen by all visitors to London. (A.)

5. Only graduates have the right to be present.

This sentence concerns 'those with the right to be present,' and says that only "graduates" are such. The logical form, therefore, is:—

(i) Some graduates *are* justified in being present. (I.)

(ii) No non-graduates *are* justified in being present. (E.)

Or—All with the right to be present *are* graduates. (A.)

6. The honest alone are respected.

This is similar to (5) and is equivalent to:—

(i) Some honest persons *are* respected. (I.)

(ii) No dishonest persons *are* respected. (E.)

Or—All respected persons *are* honest. (A.)

7. Milton is the only poet, except Dante, who has written religious poetry of the highest order.

This may be resolved into:—

(i) Milton *is* a writer of religious poetry of the highest order. (A.)

(ii) Dante *is* a writer of religious poetry of the highest order. (A.)

(iii) No other poet *is* a writer of religious poetry of the highest order. (E.)

8. We cannot be right in saying either that the good are necessarily happy, or the happy necessarily good.

This means that it is false to say:—

(i) All good men *are* happy (A.), or

(ii) All happy men *are* good. (A.)

What is implied, therefore, is:—

(i) Some good men *are not* happy. (O.)

(ii) Some happy men *are not* good. (O.)

9. None know the brave are timid but the brave.

This is best expressed by:—

- (i) Some brave *are* aware that the brave are timid. (I.)  
 (ii) No non-brave *are* aware that the brave are timid. (E.)  
 Or—All who are aware that the brave are timid *are*  
 brave. (A.)

## QUESTIONS.

144. Reduce each of the following to its strict logical form, and indicate whether it is **A**, **E**, **I**, or **O** :—

- (a) All birds have two wings.  
 (b) We know what matter is by the evidence of one or more of our senses.  
 (c) It cannot be said that a thief has any sense of honour.  
 (d) Not all our ideas deserve consideration.  
 (e) Only a few men maintain consistent conduct.  
 (f) Every one knows that a politician cannot be produced out of a mixture of a Republican and a Royalist.  
 (g) Every one knows that no politician can combine the opinions of a Republican and a Royalist.  
 (h) They never forgive who have done an injury.  
 (i) All men are not honest who say that they are.  
 (j) All his shots but two hit the mark.

145. Resolve the following into logical propositions, and indicate the quantity and quality of each :—

- (a) Cambridge is the only town in England, except Oxford, which contains an ancient university.  
 (b) No man ever fails to remain poor who is both ignorant and lazy.  
 (c) The great is not good, but the good is great.  
 (d) No one can be learned who is not both studious and ambitious, and not always then.  
 (e) Though it may be granted that old things are not therefore the best, yet they deserve careful consideration.  
 (f) The more, the merrier.  
 (g) It is just as false to say that Englishmen alone are brave, as to say that they alone are not.

146. Indicate the logical Subject, Predicate, and Copula of the following :—

- (a) Nothing succeeds like success.  
 (b) There are many such in the country.  
 (c) He envies others' wealth who has none himself.

- (d) It is cowardly to kick a man when he is down.
- (e) Only experts can judge scientific matters.
- (f) Great are the glories which surround a throne.

147. State in logical form ; indicate the Subject and Predicate ; and give the quantity and quality of the following :—

- (a) There's not a joy the world can give like that it takes away.
- (b) He jests at scars who never felt a wound.
- (c) Axioms are self-evident.
- (d) Natives alone can stand the climate of Africa.
- (e) Not one of the Greeks at Thermopylæ escaped.
- (f) All that glitters is not gold.

148. Express in Logical form :—

- (a) Not all his answers were wrong.
- (b) Not all your endeavours will accomplish it.
- (c) There is no wit like bought wit.
- (d) Girton and Newnham are the only colleges for ladies at Cambridge.
- (e) Visitors to Cambridge should make a point of seeing King's College Chapel.
- (f) There is nothing that disgusts a man so much as failure after boasting.
- (g) All that act honourably shall not be forgotten.
- (h) All Greeks are not dishonest.
- (i) Fine feathers do not make fine birds.
- (j) Amongst Englishmen many great generals are found.
- (k) Amongst graduates are a few scholars.
- (l) All flowering plants have beauty.

149. Point out any possible ambiguities in—

- (a) Some of the men have behaved disgracefully.
- (b) All are not wise who read much.
- (c) All the books cost a sovereign.

150. Give six examples of Indesignate propositions, and say what you take to be, from material considerations, the quantity of each.

151. Give, in each case, two propositions fulfilling the following conditions—

- (a) General terms for subject and predicate.

- (b) Abstract terms for subject and predicate.
- (c) Collective term for subject.
- (d) Singular terms for subject and predicate.
- (e) Singular abstract term as subject.
- (f) Negative terms for subject and predicate.
- (g) Relative terms for subject and predicate.

152. What would you take to be implied if it be asserted that the following propositions are false—

- (a) Some horse-dealers are honest.
- (b) Englishmen, as a race, are brave.
- (c) Some Volunteers did not deserve discredit.
- (d) None but the prejudiced were unconvinced.
- (e) All men are liars.
- (f) Honesty is the best policy.

153. Resolve the following passage into logical propositions, and indicate their kind :—

“The material upon which thought is exercised is supplied by the world of objects which surrounds us, and from which we receive, through our senses, impressions of various kinds, which act as stimuli to the mind and so give rise to ideas” (Welton).

154. Express in a single proposition of the simplest logical form the sense of each of the following sentences :—

- (1) If the sky were to fall, we should catch larks.
- (2) It never rains but it pours.
- (3) Many are called, but few are chosen.
- (4) Unless help arrives, we are beaten.
- (5) You cannot have your cake and eat it.
- (6) Use every man after his desert, and who should 'scape whipping? [O.—MODS.]

155. Express as adequately as you can in a single proposition of the simplest logical form the sense of each of the following sentences :—

- (1) A man may smile and smile and be a villain.
- (2) Few men think, but all have opinions.
- (3) When clouds appear, wise men put on their cloaks.
- (4) Oblige her, and she'll hate you while you live.
- (5) Angels are bright still, though the brightest fell.

[O.—MODS.]

## PROPOSITIONS.

### HINTS.

1. THE chief importance of Mr. Welton's scheme of diagrams (see *Manual*, vol. i., pp. 222-4) is that they can be used very largely in illustrating formal processes.

2. Notice that in a Hypothetical Proposition, the Consequent necessarily follows from the Antecedent, which makes explicit the ground for predicating *P* of *S*.

3. Ordinarily the terms Conditional and Hypothetical are used as synonyms. The slight difference between this and Mr. Welton's use of the terms must be carefully borne in mind when answering examination questions (*ibid.* p. 184).

4. Always reduce propositions to a strictly logical form, if not so given.

5. The relations of Categorical, Hypothetical, and Disjunctive Propositions should be carefully studied.

6. In a Disjunctive Proposition the formal implication is:—If it *is not* one (or more), then it *is* the other (or remainder); but it is not formally implied that—If it *is* one (or more) then it *is not* the other (or remainder), since this would exclude the possibility of being both (or all), *i.e.* it would accept the *exclusive* view, which the *Manual* gives reasons for rejecting (see vol. i., pp. 188-90).

### EXAMPLES.

1. Say whether the following are Categorical or Hypothetical propositions, and why:—

(a) A right-angled triangle is inscribable in a semi-circle.

(b) Trespassers will be prosecuted.

Both these are categorical in form, but this is a mere accident of expression, as they are hypothetical in meaning.

In neither case is the existence of the grammatical subject asserted as a fact. Indeed the grammatical subject is in neither case the true logical subject, which is always that aspect or piece of reality which the predicate explains. And in each case the grammatical subject contains the ground for the predication which is made. The full force of the two judgments is, therefore, given when the propositions are stated in the forms :—

- (a) If a triangle is right-angled, it is inscribable in a semi-circle.
- (b) If a person is found trespassing, that person will be prosecuted.

When thus stated, the abstract and necessary character of the judgments is made manifest, and, indeed, we always thus mentally interpret the propositions, no matter how they are stated, and the mental interpretation is the true judgment.

2. Bring out the meaning of each of the following accounts of the proposition 'All men are mortal'; and say which is logically to be preferred :—

- (a) All men have the attribute mortality.
- (b) Men = mortal men.
- (c) Men form part of the class mortals.
- (d) If a subject has the attributes of a man, it has also the attribute mortality. [L.—B.A.]

Of these propositions (*d*) must be regarded as the most explicit statement of the judgment represented, as it distinctly gives the nature of humanity as the ground of mortality. Thus (*d*) gives mortality not merely as a fact empirically ascertained, but as a necessary result of man's nature. It is, therefore, the justification of each of the other propositions. (*a*) differs from (*d*) in that the predication is simply made as a fact, for which no reason is given, thus falling short of (*d*). On the other hand, it goes beyond (*d*) in that it asserts the actual existence of men : it is concrete in its reference, whilst (*d*) is abstract. (*c*) is implied by (*a*), but is not the primary meaning of the judgment. (*b*) is an attempt to define the predicate in (*c*), but is open

to the objection that if 'mortal' has any force then the proposition is not a true equation, for the two expressions are not equivalent.

### QUESTIONS.

156. Define a Proposition ; and enumerate, with examples, the various kinds of Propositions.

157. What do you understand by Categorical Proposition? What other forms of judgment can be expanded into Categorical Propositions?

158\*. Give a full discussion, with examples, of the Logical Copula.

159\*. What do you consider to be the essential distinction between the Subject and Predicate of a proposition? Apply your answer to the following:—

From hence thy warrant is thy sword.

That is exactly what I wanted. [C.—HONS.]

160. Explain fully what is meant by the Quality and Quantity of propositions.

161. Give a full discussion of Universal, Particular, and Indesignate propositions.

162. What are the signs of Quantity recognized in Logic, and to what scheme of propositions do they lead? How do these signs of quantity affect the terms to which they belong?

163\*. State, and discuss, the signs of Quantity, other than the strictly logical, used in ordinary speech.

164. Explain the effects of complex terms in Propositions.

165\*. Give a full discussion of Compound Categorical Propositions.

166. How does the Quality of a proposition affect its Quantity? Is the relation a necessary one? [L.—B.A.]

167\*. Define 'Modality of Propositions'; and say what you know about the subject.

168\*. What position should be assigned to the Modality of Propositions in a complete system of Logic? If excluded from Logic, where and how would you treat it? [L.—M.A.]



169\*. What was meant by the 'contingent' and the 'possible' in Modal propositions? How should you define these terms now? [L.—B.A. HONS.]

170. Explain clearly, with examples, the essential difference between a Categorical and a Hypothetical Proposition. Under what kind of proposition do they both come?

171. Do distinctions of Quality and Quantity apply to Hypothetical Propositions? Give examples.

172. Express the following Hypothetical propositions in the fundamental three-term form:—

- (1) If a man steals, the law should punish him.
- (2) If the report is true, what you say is untrue.
- (3) If you do that, I will punish you.
- (4) If study is well done, the student will gain.
- (5) If two parts of hydrogen combine with one part of oxygen, water is formed.
- (6) If this work requires three hours a day, I cannot do it.

173. Discuss, with examples, the question whether Hypothetical Propositions can be reduced to Categorical Propositions.

174. Discuss the logical character of each of the following Propositions:—

- (1) If a boy is encouraged, he will study diligently.
- (2) Often when there is a shower, we see a rainbow.
- (3) If any S is M, that S is P.
- (4) If he gains 50 per cent. of the marks, he will pass.
- (5) Every inhabitant of London is either British or alien.
- (6) This hat is either yours or mine.

175. What is a Disjunctive Proposition? Discuss the question how such a proposition should be interpreted.

176. Have Disjunctive Propositions any distinctions of Quality and Quantity? What is their relation to Categorical and Hypothetical Propositions?

177. What do you take to be the exact significance of a Negative Judgment? Apply your answer to the following:—If S is P, it is not Q; S is neither P nor Q; S is either P or Q; No S is both P and Q. [L.—B.A. HONS.]

178. Discuss the relation of the Disjunctive Proposition to (a) the Hypothetical, (b) the Categorical.

[L.—B.A. HONS.]

179\*. Distinguish between Ampliative and Explicative Propositions, and give several examples of each kind.

[L.—M.A.]

180\*. In a Negative Proposition, does the negative particle belong to the copula or to the predicate?

[L.—M.A.]

181. Distinguish between a Judgment, a Proposition, a Sentence, and a Truth. With which is Formal Logic concerned?

[C.]

182\*. What do you understand by Modality, and by Modal Propositions? What notice, if any, do they receive in Modern Logic?

[C.—HONS.]

183. What are the points involved in the question of the Import of Categorical Propositions; and what is the practical importance of the question?

184. Discuss the meaning, and the value, of the Predicative View of the Import of Propositions.

185. State, and criticize, the Class-inclusion View of Propositions. To what scheme of propositions does it lead?

186\*. Examine the case for expressing Propositions in the form of Equations, (a) from the theoretic, (b) from the practical point of view.

[L.—B.SC.]

187. State and discuss the different theories as to the import of a Proposition.

[O.—MODS., L.—B.A. HONS.]

188\*. What different views of the nature and aims of Logic are involved in the question of the Quantification of the Predicate?

[L.—B.A. HONS.]

189.\* Give the new propositional forms developed by the Quantification of the Predicate; and state how far different logicians admit them into the scheme of the Syllogism.

[L.—B.A. HONS.]

190\*. Explain the meaning and practical explanation of the doctrine that "Logic postulates to be allowed to state explicitly in language all that is implicitly contained in thought."

[L.—B.A. HONS.]

191\*. Estimate critically the value of Hamilton's scheme of the Quantification of the Predicate.

192\*. What different meanings have been given to 'some' in Hamilton's scheme, and with what effect upon the propositional forms?

193\*. Explain the precise meaning of the proposition "some X's are not some Y's" (the proposition  $\omega$  of Thomson). What is its Contradictory? Give your opinion of its importance. [L.—B.A. HONS.]

194\*. What is the nature of Predication? Discuss Hamilton's doctrine that every judgment pronounces that of two notions one does or does not constitute a part of the other. [.—BSC.]

195\*. State the chief theories of the Import of Propositions. On what theory does the adoption of A, E, I and O, as the fundamental forms rest?

Criticise the additional forms which arise when the Quantification of the Predicate is adopted. [C.]

196. State clearly Mill's view of the Import of Propositions, and say what objections can be urged against it.

197\*. Examine the Existential or Compartmental View of the Import of Propositions. What special utility has this view?

198\*. State your opinion on the question whether every proposition implies or asserts the existence of Resemblance between the things or classes of things denoted by the terms. [L.—B.A. HONS.]

199\*. What are the Nominalist views of the meaning of Propositions? Distinguish carefully between the several phases of Nominalism. [L.—B SC.]

200\*. What is an Essential Proposition? and in what cases is it difficult to draw the line between Essential and Real Propositions? [L.—B.A. HONS.]

201\*. Examine the doctrine that a Proposition is the expression of a relation between two ideas. [L.—M.A.]

202\*. Examine the following statement:—"The supposed meaning in extension of a proposition has no meaning at all, until interpreted by the meaning in comprehension. All

concepts require to be construed in comprehension, and their comprehension is the whole of their meaning."

[L.—B.A. HONS.]

203. Explain and discuss briefly the following:—

- (a) In a judgment the subject is naturally interpreted in denotation and the predicate in connotation.  
 (b) Every proposition is an assertion that two names are or are not applicable to one and the same subject.

[L.—B.A.]

204\*. State explicitly which of the following meanings must be assigned to the mark of quantity "some" in the Aristotelian system:—*some only; some, perhaps none; some, it may be all or none; some certainly, and it may be all;* point out the difficulties which arise from an erroneous interpretation of this little word.

[L.—M.A.]

205\*. In what different ways is the Import of Propositions regarded from the point of view of Formal or Conceptual and of Material Logic.

[L.—B.A. HONS.]

206\*. Can all kinds of propositions be exhibited in the intensive as well as the extensive form? Give reasons in support of your answer, and in the event of its being in the negative, draw up a list distinguishing between those kinds of propositions which can and those which cannot be so exhibited.

[L.—B.A. HONS.]

207. Examine fully the question:—"Does the assertion of a categorical proposition necessarily imply that its terms are the names of really existing things?"

208\*. Discuss, fully and critically, the view that "universal propositions do not, but particulars do, imply the existence of their subjects."

209\*. State and discuss any views that you know of, other than the Predicative view and that held by Dr. Keynes, as to the Implication of Existence in propositions.

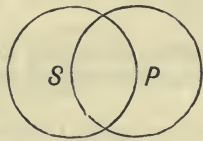
210\*. Are the following examples of Hamilton's eight-fold scheme of propositions? Give reasons for your answer.

- (1) All trains stop at all stations. (U)  
 (2) All trains stop at some stations. (A)  
 (3) Some trains do not stop at some stations. (ω)

211. Discuss the nature and use of Diagrams as illustrating the relation between the terms in a proposition. What theory of the Import of Propositions is implicit in most diagrammatic schemes?

212. Give a concise account of any schemes of diagrammatic representation of propositions, and discuss their value. [L.—B.A.]

213\*. Express by means of ordinary categorical propositions the relation between S and P represented by the following diagram:—



“If Logic is exclusively concerned with Thought, and Thought is exclusively concerned with Concepts, it is impossible to approve of a practice of representing the relation of terms in a [Proposition] by that of figures in a diagram.” Discuss this statement. [C.—HONS.]

214. Explain briefly Euler’s system of diagrams. Does it fairly represent the Four-fold scheme of Propositions? What improvements of it have been proposed?

215\*. Indicate briefly the diagrams employed in (1) Lambert’s scheme, (2) Hamilton’s scheme, (3) Dr. Venn’s scheme; and say what scheme of propositions they best illustrate.

216. Explain fully Mr. Welton’s scheme of diagrams, and discuss its special features.

217\*. Express the four ordinary propositional forms according to (1) Mr. Welton’s diagrams, (2) Lambert’s, and (3) Hamilton’s.

218\*. Express the four ordinary propositional forms according to (1) Euler’s diagrams, and (2) Dr. Venn’s.

219\*. Illustrate the following by Dr. Venn’s diagrams—All S is P or Q; All S is P and Q; All P is Q and S; All Q is S or P.

220\*. Explain :—

‘Analytical and Synthetic Judgments.’

‘Verbal and Real Propositions.’

‘Nominal and Real Definitions.’ [O.—MODS.]

221. Why do Negatives distribute their Predicates? Do Affirmatives ever distribute theirs? [O.—MODS.]

222. What reasons might be given for treating of the Proposition before the Term in a system of Logic?

[O.—MODS.]

223. What different views have been held as to the nature of Predication? [O.—MODS.]

224. In what different cases does Logical analysis lead us to Propositions in which one of the Terms is itself a Proposition? [O.—MODS.]

225\*. What erroneous logical theories have arisen from the ambiguity of the copula? [O.—MODS.]

226\*. What objections lie against the view that the predicate of a Logical Proposition should be written as a Quantity? [O.—MODS.]

## IMMEDIATE INFERENCES.

### HINTS.

1. GREAT thoroughness of memory work is necessary here, as accuracy is all important. The subject-matter is perfectly easy, but inaccuracy is fatal.

2. Always reduce ordinary grammatical sentences to strictly logical form, if they are not already in that condition (see preceding section).

3. The best plan is always to work with the ordinary term symbols,  $S, P, \bar{S}$  (*non-S*),  $\bar{P}$  (*non-P*), and to re-translate them, if necessary, into the original terms.

4. Remember that the Subaltern and Contradictory of a proposition are derived by a process of immediate inference (see example 4).

5. Notice that "Eductions" is new in the nomenclature of Logic, the term "Immediate Inference" being sometimes used to cover both Eductions and Opposition, and sometimes to denote Eductions only.

### EXAMPLES.

1. Convert by Contraposition when such a method is legitimate:—

"A soldier's a man."

"Preferment goes not by old gradation."

"Some turn to folly." [ST. A.—M.A.]

"A soldier's a man" = Every soldier is a man =  $S a P$ .

Obverse =  $S e \bar{P}$ ; ∴ Contrapositive =  $\bar{P} e S$ , *i.e.*,—

No not-man is a soldier.

"Preferment goes not by old gradation." This is best interpreted as **O**, since (1) the predicate is a separable accidens, and (2) 'some' is the most that can be formally guaranteed. Hence logical form = Some preferment is not due to old gradation =  $S o P$ .

Obverse =  $S i \bar{P}$ ; ∴ Contrapositive =  $\bar{P} i S$ , *i.e.*,—

Some things not due to old gradation are preferment.

“Some turn to folly” = Some persons are inclined to folly =  $S i P$ .

Obverse:— $S o \bar{P}$ ;  $\therefore$  No Contrapositive, since an **O** proposition cannot be converted.

2. Give the obverse, contradictory, and contrapositive of “cursed is every one that hangeth on a tree.”

[ST. A.—M.A. HONS.]

Every one who hangs on a tree is cursed =  $S a P$ .

Obverse:— $S e \bar{P}$  = No one who hangs on a tree is not-cursed.

Contradictory:— $S o P$  = Some who hang on a tree are not cursed.

Contrapositive:— $\bar{P} e S$  = No not-cursed are hanged on a tree.

3. State in strictly logical form, and convert, the two following propositions:—

“We are not cotton spinners all,  
But some love England and her honour yet.”

After two conversions do we necessarily get back to the original proposition? [DUR.—B.A.]

“We are not cotton spinners all” = Some of us are not cotton spinners =  $S o P$  (it may be colloquially implied that ‘some of us are cotton spinners,’ but this would depend upon the context—it is not *formally* implicit).

Converse:—None, being an **O** proposition.

“But some love England and her honour yet” = Some lovers of England’s honour are still to be found =  $S i P$ .

Converse:— $P i S$ . Some persons still to be found are lovers of England’s honour.

We do not necessarily get back to the original proposition after two conversions of it. For  $S a P$  gives (1)  $P i S$ , (2)  $S i P$ . **E** and **I** propositions do return to the original; thus  $S e P$  gives (1)  $P e S$ , (2)  $S e P$ ; whilst  $S i P$  gives (1)  $P i S$ , (2)  $S i P$  (see *Manual*, vol. i., pp. 255-60).

4. Write out all the immediate inferences derivable from the proposition: ‘All really happy men are virtuous,’ and give in each case the technical name of the form of inference.

[R.U.I.—B.A. HONS.]



Original proposition— $S a P$  = All really happy men are virtuous.

I. By Opposition :—

- (a)  $S i P$ . Some really happy men are virtuous.—  
*Subaltern*, is true.
- (b)  $S o P$ . It is false to say that ‘some really happy men are not virtuous.’—*by Contradiction*.
- (c)  $S e P$ . It is false to say that ‘no really happy men are virtuous.’—*by Contrariety*.

II. By Eduction :—

- (d)  $P i S$ . Some virtuous men are really happy.—*Converse*.
- (e)  $P o \bar{S}$ . Some virtuous men are not not-really-happy.—  
*Obverted Converse*.
- (f)  $S e \bar{P}$ . No really happy men are not-virtuous.—  
*Obverse*.
- (g)  $\bar{P} e S$ . No not-virtuous men are really happy.—  
*Contrapositive*.
- (h)  $\bar{P} a \bar{S}$ . All not-virtuous men are not-really-happy.—  
*Obverted Contrapositive*.
- (i)  $\bar{S} o P$ . Some not-really-happy men are not virtuous.—  
*Inverse*.
- (j)  $\bar{S} i \bar{P}$ . Some not-really-happy men are not-virtuous.—  
*Obverted Inverse*.

5. What is the relation between the first and each of the following propositions given below?—

- (a) Only the moderate have self-control.
- (b) Some who have self-control are immoderate.
- (c) Some who are moderate are not without self-control.
- (d) Some with self-control are moderate.
- (e) All who are immoderate have no self-control.
- (f) All who have not self-control are moderate.
- (a) Only the moderate have self-control = All self-controlled are moderate =  $S a P$ .
- (b) =  $S i \bar{P}$  [=  $S o P$ ] = Obverted Contradictory of (a).
- (c) =  $P o \bar{S}$  = Obverted converse of (a).
- (d) =  $S i P$  = Subaltern of (a).

(e) =  $\bar{P} a \bar{S}$  = Obverted Contrapositive of (a).

(f) =  $\bar{S} a P$ , in this form has no apparent logical relation to  $S a P$ . If we can reduce them to propositions with identical subjects we shall be better able to decide—

$$(i) S a P = S e \bar{P} = \bar{P} e S.$$

$$(ii) \bar{S} a P = \bar{S} e \bar{P} = \bar{P} e \bar{S} = \bar{P} a S.$$

Hence we see that they are Contraries.

*N.B.*—In comparing propositions in this way, care must be taken not to alter the character of the originals, *i.e.*, they must retain their Universal form.

### QUESTIONS.

227. Define Immediate Inference; and point out (1) the general principles of all Inference, (2) the special principles of Immediate Inferences. Explain briefly the two kinds of Immediate Inference.

228. What is the use of the scheme of Opposition?

[L.—B.A.]

229. Discuss fully the relations which exist between the propositions A and I, E and O.

230. Prove that of Contradictory propositions, one must be true and one must be false.

[O.—MODS.]

231. Give a full discussion of Contrary Opposition.

232. What do you understand by Sub-contrariety; and what is involved in this kind of Opposition?

233\*. "It has been argued that, if 'some' means 'some at least,' I and O may both be false; but if 'some' means 'some only,' they must both be true." Discuss this.

234. On the common view of the opposition of propositions, what are the inferences to be drawn (1) from the truth, (2) from the falsity, of each of the four categorical propositions?

[L.—B.A.]

235\*. Discuss the grounds on which Mill excludes so-called "Immediate Inferences" from the sphere of Inference. Point out the connexion between difference of opinion on this point and difference of opinion with respect to the fundamental character of Logic.

[M.—M.A.]

236. Explain the common table of Opposition of Propositions. Classify the following propositions according to quantity and quality:—

It is only the bold who are lucky.

Those who escape are very few.

No one is admitted except on business.

It cannot be that none will fall. [C.]

237\*. Discuss the dependence of Opposition on Implications of Existence.

238. Are the ordinary rules as to the Conversion of Propositions founded on the necessities of thought?

[L.—B.SC.]

239. Enumerate and exemplify the different modes of Conversion.

[L.—M.A.]

240. Give the Converse, Contradictory, and Contrary of "All A is B," "Some men are wise."

[L.—B.A.]

241. "All B.A.'s of the University of London have passed three examinations." Convert this proposition by all the modes applicable to it. What are the Contrary, Contradictory, and Subaltern propositions derived from it?

[L.—B.SC.]

242. Show how to get the Converse of the Contrary of the Contradictory of the proposition "Some crystals are cubes." How is it related to the original proposition?

[L.—B.SC.]

243. When is a proposition said to be Converted? What is *illative* conversion, conversion *per accidens*, and conversion *by negation*?

[L.—B.A.]

244. Give the Contradictory and the Converse of the following propositions:—

(a) All are not happy that seem so.

(b) Two blacks don't make a white.

(c) James struck John.

(d) Few men are free from vanity. [ST.A.—LL.A.HONS.]

245. Give the contradictories of:—

(a) Most S's are not P.

(b) Most S's are P.

(c) In any case, he was not the only one who said so

(d) Three-fourths of the candidates passed.

246. Investigate the nature of the opposition between singular propositions. [L.—B.A. HONS.]

247. Describe briefly the forms of Conversion and Opposition. Consider (*a*) how far the validity of the forms of Conversion in Categorical propositions is dependent on assumptions as to the existence of subject and predicate, and (*b*) how far the processes of Conversion and Opposition are applicable to Hypothetical and Disjunctive Judgments. [L.—B.SC.]

248. Give a definition of Eduction, and discuss the object and utility of the processes included under the name. Define, exemplify, and justify the process of Obversion. What is Material Obversion?

249. Define Immediate Inference, Conversion, Permutation, and Obversion, and point out their relations one to another. [L.—B.A. HONS.]

250\*. What indirect proofs of the validity of Conversion have been offered? Criticize them.

251. What is the relation between the propositions, Some S is not P, Some non-S is not P, No non-S is non-P.

252. Give a full discussion of Inversion, illustrating your answer by diagrams.

253. Prove the rules of Obversion, Conversion, and Contraposition by reference to the Laws of Thought; or show what other proof you would give of them.

Convert and Contraposit the proposition: For every wrong there is a legal remedy. [L.—B.A.]

254. Enumerate and describe briefly what you regard as the distinct varieties of Immediate Inference. Discuss the right of these forms to be regarded as modes of Inference.

255. All crystals are solids. [L.—B.SC.]

Some solids are not crystals.

Some not crystals are not solids.

No crystals are not solids.

Some solids are crystals.

Some not solids are not crystals.

All solids are crystals.

Assign the logical relation, if any, between each of these propositions and the first of them. [L.—M.A.]

256. Take the proposition "All sciences are useful," and determine precisely what it affirms, what it denies, and what it leaves doubtful, concerning the relations of the terms "science" and "useful thing." [L.—B.SC.]

257. Assuming that no Organic beings are devoid of carbon, what can we thence infer respectively about beings which are not organic, and things which are not devoid of carbon? [L.—B.A.]

258. Reduce to simple logical order, convert, and otherwise draw appropriate immediate inferences from the following:—

- (a) The quality of mercy is not strained.
  - (b) Some have greatness thrust upon them.
  - (c) What is not practicable is not desirable.
  - (d) Hypocrisy delights in the most sublime speculations.
- [ST. A.—M.A.]

259. What immediate inferences can be drawn from:—

- (a) Amethysts are precious stones.
  - (b) No great mathematician is without imagination.
  - (c) All is not gold that glitters.
- [DUR.—B.A.]

260. Transform the following propositions in such a way that, without losing any of their force, they may all have the same subject and the same predicate:—

All non-P is non-S; Some P is not non-S; All P is non-S; Some non-P is not non-S.

261. Explain and exemplify Obverted Converse, Obverted Contrapositive, and Obverted Inverse.

262. What is the distinction between Mediate and Immediate Inference? Give (where possible) the Converse, the Obverse, and the Contrapositive of the following propositions:—

- (a) [Quoth Hudibras] "I smell a rat."
  - (b) The longest road comes to an end.
  - (c) Only Protestant princes can sit upon the throne of England.
  - (d) Unasked advice is seldom acceptable.
  - (e) Where no oxen are, the crib is clean.
- [E.—M.A.]

263. Leslie Ellis pointed out that, though a St. Bernard dog is certainly a dog, a small St. Bernard dog is not a small

dog. How do you reconcile this with the processes of Immediate Inference as laid down by Dr. Thomson? [L.—M.A.]

264. Define, and discuss with examples, (1) Inference by Complex Conception, (2) Inference by Material Obversion.

265\*. How are the ordinary Eductions affected by the different theories of the Implication of Existence in propositions? Illustrate by instances.

266. What assertions concerning the relations of 'industry' and 'success' may be made, if it be true that 'If any man is industrious, he is successful'?

267. Invent a Conditional proposition of the O form, and educe as many propositions as possible from it.

268. Under what limitations are Eductions from Hypothetical propositions possible? Give examples.

269. What Eductions are possible in the case of Disjunctive Propositions? Give instances.

270. From All S is P what can you infer concerning not-S and not-P? Show how you justify any inference you make.

Illustrate by concrete examples what is called Immediate Inference by Added Determinants. If  $A = B$  and  $L = M$ ,  $A + L = B + M$ . Is such a theorem logically valid, either extensively or intensively? [L.—B.A.]

271. What results, as far as Immediate Inferences are concerned, follow from distinguishing quantity in hypothetical propositions? Is such distinction of logical importance? How does it affect Disjunctive propositions?

272. Show in what way the Conversion of Propositions is affected by the distribution of their terms. [O.—MODS.]

273. What is Inference? Is there Inference (1) in the Opposition, (2) in the Conversion of Propositions? Illustrate your view by examples. [O.—MODS.]

274. What difficulties are met with in applying the rules of Conversion to Hypothetical Propositions? Give examples. [O.—MODS.]

275. What is Opposition? What are the various forms of Opposition? Which of them has the greatest value, and why? [O.—MODS.]

## SYLLOGISMS.

### HINTS.

1. ALWAYS argue out problems by the *Direct* (see *Manual*, pp. 315-22), not by *Indirect Determination*—*i.e.* considering every mathematical combination of three propositions, and excluding those which offend any of the syllogistic rules.

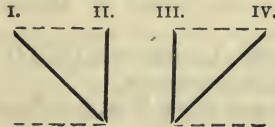
2. Adopt, as far as possible, Euclid's style of reasoning, and always give references to the Rules and Corollaries.

3. Problems in Figure and Mood will be found to turn upon: (a) Rules of the Syllogism, (b) Rules of the Distribution of Terms.

4. The following lines may be helpful in remembering the Rules:—

Of terms have but three; proposition as term;  
Distribute the Middle—in this be most firm;  
Distribute no term in Conclusion, beside,  
Unless in a premise 'tis equally wide;  
One premise affirmative, this you must learn,  
For negative premises nothing affirm;  
A negative head has a negative tail,  
And the converse of this is of equal avail.

5. The following diagram shows the position of the Middle Term in the four figures:—



(a) The *ends* of the unbroken lines indicate the positions of *M* in each figure.

(b) The broken lines represent the major and minor premises.

6. In working out problems involving Pure Conditional syllogisms, it is sometimes convenient to reduce the constituent propositions to Categorical form, and afterwards re-translate the results obtained (see example 5).

7. Notice carefully that (1) Terms are denoted by italic sans-serif type—*S*, *P*, etc.; (2) Propositions are denoted by Clarendon type—**A**, **C**, etc.

### EXAMPLES.

1. If the Minor premise is **I**, what do we know about the Conclusion, and the Major premise? [L.—B.A.]

The Conclusion must be particular (Cor. 2).

The major premise must be universal (Cor. 1).

This is all we can tell, immediately, from the Rules of Syllogism.

We may proceed thus:—

(i) If Major premise is **A**,

Then **M** must be its subject (R. III),

Since minor premise distributes neither term (R. of D.).

Therefore, conclusion is **I** (R. VI, Cor. 2).

(ii) If the Major premise is **E**,

Then either **M** or **P** may be its subject (R. of D.).

Therefore, Conclusion must be **O** (R. VI, Cor. 2).

2. Determine by direct application of the General Rules, (a) the quantity of the Major premise in the first figure; and (b) the quality of the Conclusion in the second figure. [c.]

(a) (1) *If both premises are affirmative,*

**M** can only be distributed in Major (R. of D. and Schema).

This must therefore be universal (R. III and R. of D.).

(2) *If one premise is negative,*

It must be Major, since **P** is distributed in Conclusion (R. VI and IV).

Minor must be affirmative (R. V), and does not distribute **M** (Schema, and R. of D.).

The Major must, therefore, distribute **M** (R. III), *i.e.*,—



The Major must be universal (Schema, and R. of D.).

Therefore, the Major in Fig. I must always be universal.

(b) *M* must be distributed in one premise (R. III).

Therefore, one must be negative (Schema, and R. of D.).

Therefore, Conclusion must always be negative (R. VI).

3. If the conclusion of a syllogism is a universal negative, determine the mood and figure.

Both premises must be universal (Cor. 2).

One premise must be **A** (R. V).

(1) Let **A** be the Major premise;

Then *P* must be the subject (Rule IV, and R. of D.).

The Minor is **E**, and, since both terms are distributed, it may be *S e M*, or *M e S*.

This gives us:— 
$$\left. \begin{array}{l} P a M \\ S e M \\ \hline \therefore S e P \end{array} \right\} \begin{array}{l} \text{Camestres,} \\ \text{Fig. II.} \end{array} \quad \left. \begin{array}{l} P a M \\ M e S \\ \hline \therefore S e P \end{array} \right\} \begin{array}{l} \text{Camenes,} \\ \text{Fig. IV.} \end{array}$$

(2) Let **A** be the Minor premise;

Then *S* must be the subject (Rule IV, and R. of D.).

The Major being **E**, may be either *P e M*, or *M e P*.

Hence we get:— 
$$\left. \begin{array}{l} P e M \\ S a M \\ \hline \therefore S e P \end{array} \right\} \begin{array}{l} \text{Cesare,} \\ \text{Fig. II.} \end{array} \quad \left. \begin{array}{l} M e P \\ S a M \\ \hline \therefore S e P \end{array} \right\} \begin{array}{l} \text{Celarent,} \\ \text{Fig. I.} \end{array}$$

Therefore the moods and figures are:—*Celarent* in Fig I, *Camestres* and *Cesare* in Fig. II, and *Camenes* in Fig. IV.

Notice that the above would be an answer to the question:—‘Show that there are only four ways of proving an **E** conclusion.’

4. What mood and figure does the following correspond to?—If all were content to follow tradition, no progress would be made; but, if the social organism lives, it must make some progress; therefore, if the social organism lives, some are not content to follow tradition.

This is of the form:— 
$$\frac{\begin{array}{l} \text{If } C, \text{ then not } B, \\ \text{If } A, \text{ then } B, \end{array}}{\therefore \text{If } A, \text{ then not } C.}$$

And this corresponds to *Cesare*, Fig. II.

Notice that the hypothetical denial of the minor only justifies the hypothetical assertion of the *Contradictory* (not the *Contrary*) of the Antecedent of the Major Premise, in the Conclusion (cf. *Manual*, pp. 367-8).

5. What would you infer from:—If a man often prevaricates, he is soon demoralized; if a man is a politician, he often prevaricates?

Let  $P$  = prevaricating man.

„  $D$  = demoralized „

„  $S$  = politician.

Then we have given:—

*If any M is P, that M is D.*

*If any M is S, that M is P.*

We infer  $\therefore$  *If any M is S, that M is D.*

Or, Categorically:—

*Every P is D.*

*Every S is P.*

We infer  $\therefore$  *Every S is D.*

That is, every man who is a politician, is one who is soon demoralized.

Or, Conditionally: If any man is a politician, he is soon demoralized.

### QUESTIONS.

276. Define a Syllogism; and point out the importance of distinguishing between the *form* and *matter* of a syllogism.

277. Show, with instances, that false premises may furnish true conclusions. [L.—M.A.]

278. Enumerate the Elements of a Syllogism; and say whether you regard these elements as having any real significance.

279. Give a division of Syllogisms; and a definition of each of the *membra dividenda*.

280. State fully the meaning and implications of the phrase “Middle Term.” Is the third term of a Syllogism always a middle term? [L.—B.SC.]

281. Can the Syllogism be based exclusively on the so-called Laws of Thought—Identity, Contradiction, and Excluded Middle? [L.—M.A.]

282\*. Mention and criticize the different modes of stating the fundamental axiom of the syllogism; and give the logical character or foundation of the axiom. [L.—B.A. HONS.]

283\*. *Nota notae est etiam nota rei ipsius.* What class of syllogisms does this regulate? Compare them carefully, as to their structure and rules, with the syllogisms regulated by the ordinary dictum. [L.—M.A.]

284\*. Give what you consider the best statement of the *Dictum de omni et nullo*; and discuss other statements of it.

285\*. State and criticize the axiom of the syllogism as given by (1) Leibniz, (2) Lotze, and (3) Kant.

286. Upon what principle have the names Major, Middle, and Minor, been applied to the terms of a Syllogism? How far are these names generally applicable? [O.—MODS.]

287\*. What different views have been held as to the *Dictum de omni et nullo*?

How does the view taken bear upon the subject of Reduction? [O.—MODS.]

#### CANONS OF PURE SYLLOGISM.

288. Show that the general rules of the Syllogism can be derived from the *Dictum de omni et nullo*.

289. Give a careful statement of, and briefly discuss, the Rules of the Syllogism.

290\*. Examine the statement, "Two negative premises may yield a valid conclusion; but not syllogistically." [D., ST. A.—M.A. HONS.]

291. Give a clear and precise explanation of the rule concerning the Middle Term of a syllogism. [L.—B.A.]

292. Give the principal and subordinate rules of Syllogism, and show how the latter are deduced from the

former. Exemplify by concrete instances how each rule may be violated. [ST. A.—M.A.]

293\*. Enunciate the general laws of categorical syllogism, and discuss the possibility of reducing them to a smaller number of fundamental rules from which the others might be derived. [L.—B.SC.]

294. State the cases in which no valid conclusion can be drawn from two premises, indicating, in each instance, the reason why no inference is possible. [G.—M.A.]

295\*. Illustrate by examples (1) the rule as to the introduction of two negative premises into a syllogism, and (2) the rule as to the distribution of terms in the conclusion which were undistributed in the premises. What follows from evading these rules by the introduction of negative terms? [C.—HONS.]

296. Show that if the Conclusion of a Syllogism be a universal proposition, the Middle Term can be but once distributed in the premises. [L.—B.A. HONS.]

297. If the major term of a syllogism be the predicate of the major premise, what do we know about the minor premise? [L.—B.A.]

298. If it be known concerning a Syllogism that the middle term is twice universal, what do you know concerning the conclusion? Prove your answer. [L.—M.A.]

299. Prove by means of the syllogistic rules that, given the truth of one premise and the conclusion of a valid syllogism, the knowledge thus in our possession is in no case sufficient to prove the truth of the other premise. [C.—HONS.]

300. Prove in general language, without examples of any kind:—

(1) That there is no inference from particular premises.

(2) That if one premise is particular, so must be the conclusion.

Can there, in any case, be an exception to either of these rules? [C.—HONS.]

301. What can be determined respecting a syllogism under each of the following conditions?—

- (1) That only one term is distributed, and that only once;
- (2) That only one term is distributed, and that twice;
- (3) That two terms only are distributed, each only once;
- (4) That two terms only are distributed, each twice.

[L.—B.A.]

302. Prove that, when the minor term is predicate in its premise, the conclusion cannot be A.

[L.—B.A.]

303. Put the following argument into syllogistic form:—  
How can any one maintain that anger is always an evil, who admits that moral indignation involves anger, and yet may sometimes be a real good?

304. 'There is no foreigner among the wounded, so no Englishman can have received a wound.' Supply a premise that will make this reasoning valid. Can you supply any premise that will make it (1) guilty of illicit major, (2) guilty of illicit minor?

305. Arrange the following so as to form as many valid syllogisms as possible:  $Q i R$ ,  $N a R$ ,  $Q i N$ ,  $R i Q$ ,  $R a N$ ,  $N i Q$ ,  $R o N$ ,  $Q e R$ ,  $N e Q$ .

306. Examine the following:—

- (a) There is a purpose in everything reasonable, and therefore all amusements, being purposeless, are irrational.
- (b) This Borgia, being mad, could do no wrong; and so, in killing those who vexed him, his conduct was in a sense praiseworthy, he having done no wrong though under provocation.
- (c) Where there is no temptation there is no wrong-doing; but where wrong-doing is impossible, doing right is a necessity; but what is done necessarily is no longer done morally.

[L.—B.SC.]

307\*. Show how it is possible for a valid conclusion to be drawn from particular premises.

[O.—MODS.]

## FIGURE AND MOOD.

308. What are the *figures* of the syllogisms? Explain and illustrate "I A I is an allowable mood in the third figure, but in the first it would have an undistributed middle." [L.—B.A.]

309. Give the special rules of the Figures, with the reasons for them. [L.—M.A., B.A. HONS.]

310. Why cannot an affirmative conclusion be drawn in Fig. 2? [L.—B.A.]

311. Show that the conclusion in the Second Figure must be negative, and in the Third particular. [L.—B.A.]

312. Show that if the conclusion in the Fourth Figure is O (not subaltern) the major premise must be E.

313\*. Ought Figure 4 to be treated as an independent Figure, or only as a variety of Figure 1?

[D., L.—B.A. HONS.]

314\*. State briefly the various opinions that have been held by logicians regarding Figure, and in particular discuss the reasons for and against the admission of the Fourth Figure. [O.—MODS., L.—B.A. HONS.]

315. Why cannot O stand as a premise in the 1st, as a major in the 2nd, as a minor in the 3rd, or as a premise in the 4th Figure? [C.]

316. Given the Minor premise of a syllogism negative, why cannot the figure be either the first or the third?

Give reasons for accepting or rejecting the fourth figure by the side of the others. [L.—B.SC.]

317. What moods are good in the first figure and faulty in the second, and *vice versa*? Why are they excluded in one figure and not in the other? [O.—MODS.]

318. Examine whether I A I, E I O, are valid or invalid in each of the figures. [L.—B.A.]

319. Prove that no syllogism in the fourth figure can be correct which has a particular negative among its premises, or a universal affirmative for its conclusion. [L.—M.A.]

320. In what figures are O A O and E I O respectively illegitimate? and why? [L.—M.A.]

321. Prove that in the first figure (1) the major premise must be universal, (2) the minor premise must be affirmative. [O.—MODS.]

322. If the major term be universal in the premises and particular in the conclusion, determine the mood and figure, it being understood that the conclusion is not a weakened one. [C.]

323. Show that it is impossible to have the conclusion in A in any figure but the first. What fallacies would be committed if there were such a conclusion to a reasoning in any other figure? [C.]

324. Express the following argument in as many moods of the third figure as you can, using any process of immediate inference which may be necessary:—Some things which have a practical worth are also of theoretical value; for every science has a theoretical as well as a practical value. [MEL.]

325\*. Give a brief discussion of the 'characteristics' of each figure. Has Figure any practical value?

326. What is meant by Mood? Show from the rules of the syllogism what moods are alone admissible in the second figure. [DUR.—B.A.]

327. In what different ways can the Valid Moods be determined? Give examples.

328. What do you understand by the following:—The Mnemonic Lines, Fundamental and Strengthened Syllogisms, Subaltern Moods or Weakened Syllogisms?

329. Give instances of syllogisms in Barbara, Camestres, Disamis, Fesapo; and briefly explain what is implied by these terms. [ST. A.—M.A.]

330. Name the Weakened Moods of the syllogism. In what figure can there be no weakened mood, and why? Do any of the nineteen moods commonly recognised give a weaker conclusion than the premises would warrant? [L.—B.A. HONS.]

331. Are the following moods valid? In which figures? If valid, why? E A O, I E O, O A O. [O.—MODS.]

332. Construct a syllogism in *Disamis* to prove that 'some taxation is necessary.' [O.—MODS.]

333. Supply premises in all four figures to prove the

conclusion that 'some wars are not justifiable,' naming in each case the mood that you select. [O.—MODS.]

334\*. Determine, by the special rules of the figure, what moods are valid in the third figure.

335. Give examples, from ordinary subjects, of reasonings in each of the four figures; and illustrate them by diagrams.

336\*. Indicate the dependence of the validity of syllogisms upon the theory adopted as to the implication of existence involved in propositions.

337\*. What are the points to be aimed at in any system of diagrammatic representations of syllogisms? How far do the ordinary schemes meet these requirements?

338. How far does the doctrine of Figure and Mood apply to Pure Disjunctive Syllogisms? Give examples.

339. Discuss, with examples, the application of the doctrine of Figure and Mood to Pure Hypothetical Syllogisms.

340. To what mood and figure does the following correspond:—If the Australian colonies form a Confederation, their home trade is likely to be considerably increased; and, if their home trade is considerably increased, their foreign trade is also likely to largely increase; therefore, if the Confederation is formed, the Australian foreign trade is likely to increase largely.

341\*. If the conclusion of a valid syllogism be substituted for the major premise, and the resulting premises yield a legitimate conclusion, determine the figure and mood of the new syllogism.

342\*. Is it possible that there should be a valid syllogism such that, each of the premises being converted, a new syllogism is obtainable, giving a conclusion in which the old major and minor terms have changed places?

Prove the correctness of your answer by general reasoning, and if it is in the affirmative determine the syllogism or syllogisms fulfilling the given conditions. [C.—HONS.]

343\*. Which figure is most convenient (1) for overthrowing an adversary's conclusion; (2) for establishing a negative conclusion; (3) for proving a universal truth? [O.—MODS.]

344. Prove that in every figure, if the Minor premise is Negative the Major premise must be Universal.

[O.—MODS.]



## REDUCTION.

### HINTS.

(1) PROBLEMS in Reduction turn upon (a) Immediate Inferences, and (b) Transposition of premises.

(2) An accurate knowledge of the significance of the consonants in the Mnemonic Lines is important.

(3) Indirect Reduction is also called—*Reductio ad impossibile*, *Reductio per impossibile*, *Deductio ad impossibile*, *Deductio ad absurdum*.

(4) Always use Direct Reduction, unless the Indirect is specifically demanded, or necessary.

### EXAMPLES.

(1) Construct arguments in *Darapti* and *Fesapo*, and reduce them to Fig. I. [c.]

*Darapti*, Fig. III—

(i) All Germans are well educated.

(ii) All Germans are soldiers.

∴ Some soldiers are well educated.

Reduction to *Darii*, Fig. I—

(i) All Germans are well educated.

Some soldiers are Germans—[Converse of (ii).]

∴ Some soldiers are well educated.

*Fesapo*, Fig. IV—

(i) No irrational commands are moral duties.

(ii) All moral duties are beneficial.

∴ Some beneficial things are not irrational commands.

Reduction to *Ferio*, Fig. I—

No moral duties are irrational commands—[Converse of (i).]  
 Some beneficial things are moral duties—[Converse of (ii).]

∴ Some beneficial things are not irrational commands.

(2) Reduce *Camestres* and *Baroco* to *Cesare*.

*Camestres* to *Cesare*, both in Fig. II.—

$$\begin{array}{ccc} PaM & & SeM \\ SeM & \times & PaM \\ \hline \therefore SeP & & \therefore PeS \\ & & \text{(by Conv.) } \therefore SeP \end{array}$$

*Baroco* to *Cesare*, both in Fig. II. Since the minor premise and conclusion in *Baroco* are particular, whilst in *Cesare* they are universal, the reduction must be Indirect.

$$\begin{array}{ccc} \text{(i)} & PaM & [\text{Converted Obverse of (i)}] - \bar{M}eP \\ \text{(ii)} & \underline{SoM} & [\text{Contradictory of (iii)}] - SaP \\ \text{(iii)} & \therefore SoP & \therefore Se\bar{M} \\ & & \text{(by Obv.) } \therefore SaM \end{array}$$

But  $SaM$  contradicts  $SoM$  (the original minor), and is therefore false. Hence  $SaP$ , the contradictory of the original conclusion, is false; *i.e.*, the original conclusion is true (but see *Manual*, p. 359, end of § 128).

### QUESTIONS.

345. What is Reduction? State concisely, and discuss, views that have been held as to the worth of the process. [L.—B.SC.]

346. Explain fully, with illustrations, the significance of the Mnemonic lines in regard to Reduction.

347. Some logicians have asserted that all the moods of the syllogism are reducible to the form of Barbara. Inquire into the truth of this assertion. [L.—M.A.]

348. Construct an argument in *Ferison*, and reduce it to Fig. 1. [L.—B.A.]

349. Reduce *Fesapo* to the first figure, *Celarent* to the fourth figure, and *Felapton* to the second figure. [L.—B.A.]

350. State the following argument in a syllogism of the third figure, and reduce it, both directly and indirectly, to the first:—Some things worthy of being known are not directly useful, for every truth is worthy of being known, while not every truth is directly useful. [M.]

351. Define Indirect Reduction; and exemplify it in the cases where it is employed, and show how they can be reduced ostensively. [L.—B.A. HONS.]

352. Give an original example of A O O in the figure where it is valid; and reduce it *ostensively* to the first; also of I A I in any figure where it occurs, and prove it valid by *Reductio ad Impossibile*. [L.—B.A. HONS.]

353. In what Moods and Figures are the following syllogisms? Reduce them.

(a) The nervous fluid will not travel along a tied nerve;  
Electricity will travel along a tied nerve;  
Therefore, electricity is not the nervous fluid.

(b) No men are birds;  
All birds are animals;  
Therefore, some animals are not men. [G.—M.A.]

354\*. Show that the validity of Reduction is dependent on the theory of the implication of existence involved in propositions.

355. State clearly the nature of *reductio ad impossibile*, and examine (1) the validity of the reasoning, and (2) the legitimacy of the reduction.

356. Discuss, with examples, the application of Reduction to Pure Hypothetical syllogisms.

357. Reduce *Ferison* to *Datisi*, and *Fresison* to *Barbara*

## MIXED SYLLOGISMS.

### HINTS

1. As the form of inference in a Mixed Hypothetical Syllogism is the same whether the major premise is stated with three or four terms, it is not necessary to reduce the latter to the former.

2. In all cases of *Modus Tollens*, in Hypothetical Syllogisms, care should be taken to draw only the *Contradictory* of the Antecedent of the major premise as the Conclusion; the Contrary is not justified (see *Manual*, pp. 367-8).

3. The rule "posit **A** or sublate **C**" is a sufficient guard against all other kinds of formal fallacy in Mixed Syllogisms.

4. The distinctive feature of the Dilemma is that it offers a choice of alternatives, which no other form of syllogism does.

5. The mutual convertibility of the Constructive and Destructive forms of Dilemma should be carefully noted (see *Manual*, pp. 379-81).

6. Formal rebuttal does not prove the invalidity of the Dilemma rebutted.

### EXAMPLES.

1. Reduce the following to an affirmative form:—If no politicians are honest, then no laws are just; but some laws are just; therefore, some politicians are honest.

This is the negative form of *Modus ponendo ponens*:—

$$\begin{array}{l} \text{If not A, then not C,} \\ \quad \text{C,} \\ \hline \therefore \text{A.} \end{array}$$

Obverted contrapositive of major :—

$$\begin{array}{l} \text{If } C, \text{ then } A, \\ \underline{C,} \\ \therefore A. \end{array}$$

This is the affirmative form of *Modus ponendo ponens*.

That is :—

If *some* laws are just, then *some* politicians are honest ;  
Some laws are just ;

∴ Some politicians are honest.

2. Reduce the following to categorical form :—Every political reform is either rational, or it is useless ; the Factory Acts have proved of great utility ; therefore, this reform was not contrary to reason.

This may be expressed :—

Every political reform is either based on rational principles,  
or is found to be of no practical value.

The Factory Acts have proved of great utility.

Therefore, this reform was not contrary to reason.

This is a Disjunctive of the form :—

$$\begin{array}{l} \text{Every } S \text{ either is } P \text{ or is not } Q. \\ \text{These } S\text{'s are } Q. \\ \underline{\hspace{10em}} \\ \therefore \text{These } S\text{'s are } P. \end{array}$$

This reduces to the Conditional form :—

$$\begin{array}{l} \text{If any } S \text{ is not } P, \text{ that } S \text{ is not } Q. \\ \text{These } S\text{'s are } Q. \\ \underline{\hspace{10em}} \\ \therefore \text{These } S\text{'s are } P. \end{array}$$

This may be expressed categorically by a syllogism in *Cesare* (Fig. II).

$$\begin{array}{l} \text{No } S \text{ which is not } P \text{ is } Q. \\ \text{These are } S\text{'s which are } Q, \\ \underline{\hspace{10em}} \\ \therefore \text{These are not } S\text{'s which are not } P. \\ \text{i.e., These are } S\text{'s which are } P. \end{array}$$

The Conditional form given above is the *Modus ponendo ponens* of the **Modus Tollens**. The argument may be equally

well, and more simply, expressed in the corresponding form of the **Modus Ponens**, *e.g.* :—

$$\begin{array}{l} \text{If any } S \text{ is } Q, \text{ that } S \text{ is } P. \\ \text{These } S\text{'s are } Q. \\ \therefore \text{These } S\text{'s are } P. \end{array}$$

This reduces to the categorical form as a syllogism in *Barbara* (Fig. I)—

$$\begin{array}{l} \text{Every } S \text{ which is } Q \text{ is } P. \\ \text{These are } S\text{'s which are } Q. \\ \therefore \text{These are } S\text{'s which are } P. \end{array}$$

3. Rebut the following Dilemma :—If a man is married he is miserable because he has to take care of a wife, and if he is unmarried he is miserable because he has no wife to take care of him : but he is either married or unmarried ; therefore, in either case he is miserable.

This is formally rebutted by :—

If a man is married he is not miserable because he has a wife to take care of him ; and if he is unmarried he is not miserable because he has not to take care of a wife.

But he is either married or unmarried.

Therefore, in either case, he is not miserable.

### QUESTIONS.

358. Explain, with examples, the nature of a Mixed Syllogism, pointing out, especially, the particular functions of the Major and Minor premises. What is the ultimate basis of this kind of reasoning ?

359. What are the valid moods in Mixed Syllogisms, and how are they determined ?

360. Show the dependence of the inference in a Mixed Hypothetical Syllogism upon the laws of thought.

361. Explain, and exemplify, the rule of Mixed Hypothetical Syllogisms.

362. Discuss, with examples, the reduction of Mixed Hypothetical Syllogisms to the categorical form.

363. Distinguish between a Constructive and a Destructive Hypothetical Syllogism, and show how the one may be reduced to the other. [C.]

364. What is meant by Disjunctive Syllogisms, and what conclusion can be drawn from them? Give examples.

[DUR.—B.A.]

365. Invent a concrete example of a disjunctive syllogism with an affirmative conclusion, stating on what the validity of disjunctive syllogisms depends. [O.—MODS.]

366. Is it possible to apply distinctions of Figure either to Hypothetical or Disjunctive Syllogisms? [C.]

367. Test the following, pointing out clearly what fallacy or fault, if any, is committed:—‘If all the theories of metaphysics were sound, some would be accepted by a majority of thinkers; but, since none are accepted by a majority of thinkers, none are sound.’

368. What are the rules which apply to Inference by Disjunctive propositions? Exemplify them, and show whether they are or are not reducible to the *Dictum de omni et nullo*. [L.—M.A.]

369. Examine the question whether disjunctive arguments are reducible to the forms of the categorical syllogism.

[L.—B.A. HONS.]

370. How many forms of Disjunctive Syllogisms are there? What is the canon for them?

371. How many kinds of Disjunctive syllogisms are there, and how do they arise? Give a brief discussion of them.

372. Explain what is meant by a Dilemma in Logic. Does the following correspond to your definition?—‘If he managed to escape he must have been either very clever or very rich; but he was both stupid and poor, so he cannot have escaped.’ [C.]

373. Give an example of each form of Dilemma, and show how fallacies may occur in this kind of argument.

[MCG.]

374. What do you understand by (1) Negative, (2) wholly Hypothetical, forms of Dilemma? Give examples.

375\*. Give, with illustrations, a brief *résumé* of the different views as to the definition and forms of Dilemma.

376. What is meant by Rebutting a Dilemma? Invent a dilemma of the form: *Neither if A, then C, nor if B, then D; either C or D; therefore, either not A or not B; and rebut it.*

377\*. Explain and justify your opinion as to whether 'Hypothetical Syllogisms' are, or are not, to be regarded as instances of Mediate Reasoning.

[L.—M.A., B.SC., B.A. HONS.]

378. Can Dilemmas be reduced to Categorical forms? If so, give examples.

379. What is a Hypothetical Syllogism?

What is the Logical fallacy involved in arguing from the affirmation of the Consequent to the affirmation of the Antecedent?

[C.]

380. What is a Dilemma? Whence its illusory nature? Give an example of its legitimate use from Geometry.

[M.—B.A.]

381. What is meant by Constructive and Destructive Hypothetical Reasoning?

'If X is true then either Y or Z is true: but Y is not true.' What conclusion can be drawn?

[C.]

382. What are the rules of hypothetical syllogisms? To what rules of categorical syllogism do they correspond?

[O.—MODS.]

383. Show that denying the antecedent or granting the consequent of a Conditional involves a logical fault, if the argument be expressed in syllogistic form.

[O.—MODS.]

384. Define Dilemma. Construct a dilemma to prove that 'examinations are useless,' and rebut it.

[O.—MODS.]



## ABRIDGED AND CONJOINED SYLLOGISMS.

### HINTS.

1. IN discussing an Enthymeme always indicate the suppressed proposition.

2. Notice that in a Goclenian Sorites any two consecutive propositions give the form of the First Figure, but in the Aristotelian they have to be transposed to do this. In an Aristotelian Sorites there are no syllogisms in the Fourth Figure, as might be supposed at the first glance.

3. The difference between Progressive and Regressive Chains of Reasoning, and the fact that Sorites may consist of Hypothetical propositions, should be carefully noted.

### EXAMPLES.

1. Examine the following :—He must be mad to do such a thing.

This is an Enthymeme of the First Order. The suppressed premise is: Every one who does such a thing is mad. The syllogism, therefore, is :—

Every one who does such a thing is mad.

He is one who does such a thing.

∴ He is mad.

2. Analyse, logically :—If legal punishment always follows crime, then fraud is always punished ; if frauds are always punished, they cease ; if frauds cease, then all men are honest : but it is not true that all men are honest ; therefore, legal punishment does not always follow crime.

This is an Inferential Aristotelian Sorites.

It may be written thus :—

If legal punishment, etc., then fraud is always punished.

If frauds, etc., then they cease.

If frauds cease, then every man is honest.

But it is not the case that every man is honest.

$\therefore$  Legal punishment does not always follow crime.

Symbolically :—

$$\begin{array}{l} \text{If } A, \text{ then } B, \\ \text{If } B, \text{ then } C, \\ \text{If } C, \text{ then } D, \\ \text{Not } D, \\ \hline \therefore \text{Not } A. \end{array}$$

We can also analyse it into syllogisms :—

$$\begin{array}{l} (a) \text{ If } B, \text{ then } C, \\ \text{If } A, \text{ then } B, \\ \hline \therefore \text{If } A, \text{ then } C. \end{array}$$

$$\begin{array}{l} (b) \text{ If } C, \text{ then } D, \\ \text{If } A, \text{ then } C, \\ \hline \therefore \text{If } A, \text{ then } D. \end{array}$$

$$\begin{array}{l} (c) \text{ If } A, \text{ then } D, \\ \text{Not } D, \\ \hline \therefore \text{Not } A. \end{array}$$

3. Invent a Double Epicheirema, and show fully what it really consists of.

Every rogue is cunning, because of the risk he incurs.

Every liar is a rogue, because he wishes to gain an unfair advantage.

$\therefore$  Every liar is cunning.

Symbolically :—

$$\begin{array}{l} \text{Every } M \text{ is } P, \text{ because it is } X \text{ (risk-incurring).} \\ \text{Every } S \text{ is } M, \text{ because it is } Y \text{ (unfair).} \\ \hline \therefore \text{Every } S \text{ is } P. \end{array}$$

This consists of :—

(1) A syllogism in Fig. I, *Barbara* :—

$$\begin{array}{l} \text{Every } M \text{ is } P, \\ \text{Every } S \text{ is } M, \\ \hline \therefore \text{Every } S \text{ is } P. \end{array}$$

(2) Two Enthymemes of the First Order in Fig. I, *Barbara* :—

$$\begin{array}{l} (a) \text{ Every } X \text{ is } P \text{ (suppress d).} \\ \text{Every } M \text{ is } X \text{ (given in major premise).} \\ \hline \therefore \text{ Every } M \text{ is } P. \end{array}$$

$$\begin{array}{l} (b) \text{ Every } Y \text{ is } M \text{ (suppressed).} \\ \text{Every } S \text{ is } Y \text{ (given in minor premise).} \\ \hline \therefore \text{ Every } S \text{ is } M. \end{array}$$

### QUESTIONS.

385. In what does the peculiarity of the Enthymeme consist? In what sense did Aristotle use the term Enthymeme? What is the derivation of the word? [O.—MODS.]

386. Define Prosylogism, and Episylogism; and say of what genus of Reasoning they are species.

387. Define Sorites; and show clearly, by an example, of what a Sorites is composed.

388\*. Distinguish between the ordinary and the Godenian Sorites, and show at length under what conditions the latter is valid.

Can there be a Sorites in the second or third figure? Justify your answer. [L.—B.A. HONS.]

389. Show that in the ordinary Sorites (1) only one premise can be negative and it must be the last, and (2) only one premise can be particular and it must be the first.

[M.—B.A.]

390\*. State and explain Aristotle's definition of Enthymeme. What is the value of this form of argument?

[O.—MODS.]

391. Exemplify, and analyse, the different kinds of Sorites.

392. Construct a valid Sorites argument with a negative premise, and prove its validity by expanding it. [O.—MODS.]

393. In what different senses have the terms Enthymeme and Sorites been used? Exemplify the Extensive and Intensive Sorites in a reasoning of five terms. [L.—M.A.]

394. Take any Enthymeme (in the modern sense), and supply premises so as to expand it into (a) a syllogism, (b) an epicheirema, (c) a sorites; and name the mood, order, or variety of each product. [C.]

395. Define, and discuss, with examples, Epicheiremas.

396. Reduce the following to logical form, and say if either contains any fallacy:—

(a) Free Trade is a great boon to the working man, for it increases trade, and thus cheapens articles of ordinary consumption; this gives a greater purchasing power to money, which is equivalent to a rise in real wages; and any rise in real wages is a boon to the working man.

(b) All thieves are dishonest; all dishonest persons are immoral; some immoral persons are not punished; therefore, some thieves are not punished.

397. Classify the following and examine their validity:—

(a) Those who have shall not receive; those who do not receive do not want.

(b) If we have a wet summer, there is always a good clover crop. We shall therefore have a poor crop this year, for the summer has been very dry.

(c) If the train is late, I shall miss my appointment; if it is not late, I shall miss it (the train): but either it will be late or not late; therefore, in any case, I shall miss my appointment.

#### FUNCTIONS OF THE SYLLOGISM.

398\*. "The fundamental form of inference is reasoning from particulars to particulars." Examine this view, pointing out its bearing on the theory of Syllogism.

[O.—MODS., O.C.M.]

399\*. On what psychological basis does Mill's view of the Syllogism rest?

[L.—B.SC.]

400\*. Examine the principle of the Syllogism with a view to show, first, whether syllogistic inference involves a real advance in knowledge, and, secondly, whether this inference is perfectly clear and self-evident. [L.—B.SC.]

401\*. How would you meet the objection that the Syllogism is not the form of deductive inference, as men do not think or speak in Syllogisms?

402\*. It is maintained, on the one hand, that no inference is valid in which the conclusion is not contained in the premises, and, on the other hand, that no movement of thought deserves to be entitled inference in which there is not progress from the known to the unknown. Examine the grounds for the two statements, and discuss the possibility of holding them jointly. [L.—M.A.]

403\*. How does it come to pass that there can be any dispute as to whether the Syllogism is a *petitio principii*? [L.—B.A. HONS.]

404\*. "The *petitio principii* is a material not a formal fallacy" (Mansel). Explain this carefully, so as to show the syllogistic doctrine which it implies. [O.—MODS.]

405. Discuss the claim of the Syllogism to cover all forms of deductive reasoning. [L.—B.SC.]

406\*. Is the Syllogism the type of all Reasoning? If not, what is the type? [L.—B.A. HONS.]

407\*. Can the argument *a fortiori* be reduced under the common Syllogism? [L.—B.A. HONS.]

408\*. On the supposition that the Syllogism is not the true type of Reasoning, what useful purposes may still be served by it? [L.—B.A. HONS.]

409\*. Determine the character and form of the following arguments:—

(a) X lies to the south-east of Z, being due south of Y, which is due east of Z.

(b) A is taller than C, being taller than B. [L.—B.SC.]

410\*. What do you understand by "A Logic of Relatives"? What attempts have been made to formulate such a theory? What is the relation expressed in syllogistic arguments?

## POSTULATES OF INDUCTION.

### HINTS.

1. No thorough grasp of the principles of Inductive Logic can be obtained unless Chapter I., Book V., is completely mastered; and the student will probably find it the most difficult in the volume.

2. Mill's Logic is still constantly regarded as the standard work on Induction. It is therefore particularly necessary to understand his standpoint, and to perceive his confusions and errors.

3. Bear in mind that all Uniformities cannot be reduced to uniformities of causation.

4. Distinguish Cause in its scientific sense of totality of conditions and its popular sense as the most obvious or proximate *one* of the conditions.

5. Arguing in a circle is a very common error in attempting to explain "axioms." Thus Mill makes uniformity in nature the ground of all induction, but argues that it is itself established by an induction *per enumerationem simplicem*.

### QUESTIONS.

411. Critically compare Mill's theory of Causation with that of some other recent logician. [L.—B.SC.]

412. What variety of meaning has been assigned to the word Cause? [E.—M.A.]

413. Enumerate and carefully distinguish the presuppositions involved in Inductive Inference, and estimate the degree of certainty which this kind of argument yields.

[E.—M.A.]

414. Consider the validity of Hume's development of the doctrine of physical Causation. [E.—M.A.]

415. Explain and consider the grounds for the statement that there can be no demonstration of matters of fact.

[L.—B.A.]

416. Explain in detail the meaning you assign to the causal judgment, indicating the relation of that judgment to inductive procedure generally, and considering how far, if at all, inductive procedure is dependent on any particular theory as to nature and value of the causal judgment.

[L.—M.A.]

417. In what relation does the antecedence and sequence of phenomena stand to the principle of causation, and to the doctrine of the uniformity of the order of nature?

[L.—B.A. HONS.]

418. Distinguish between the popular and scientific notion of Cause.

[L.—B.SC.]

419. How far does Mill's doctrine of Causation require modification in the light of subsequent physical research?

[L.—B.SC.]

420. In what relation does the causal judgment stand to the uniformity of Nature?

[L.—B.A.]

421. Compare the following ways of expressing our belief in the Uniformity of Nature :—

(a) The future will resemble the past.

(b) The unknown will resemble the known.

(c) The unobserved cases will resemble the observed cases.

[L.—B.A. HONS.]

422. "A cause is an effect concealed ; an effect is a cause revealed." Examine this critically.

[L.—B.A. HONS.]

423. What definition of Cause do you consider most in harmony with the tendency of contemporary research?

[L.—B.SC.]

424. Discuss the proposition that the Cause invariably precedes the Effect. Have recent discussions served to confirm Mill's view on this subject?

[L.—B.A.]

425. "A vigorously exact interpretation of causal connexion would render the law of causation scientifically useless." Discuss this.

[L.—B.A. HONS.]

426. If space and time be subjective, what is the logical conclusion as to our knowledge of Externality?

[L.—B.A. HONS.]

427. Examine the view that represents the principle of Uniformity of Nature as a merely identical proposition.

[L.—M.A.]

428. Probe to the bottom the question of Plurality of Causes and Effects in nature.

[L.—M.A.]

429. Discuss the value of the principle of Sufficient Reason for logical doctrine.

430. What is meant by Final Cause? Contrast with Efficient Cause.

431. Analyse the notion "Reality" in relation to "Experience."

432. Distinguish *causa essendi* and *causa cognoscendi*.

433. What are the characteristics of a perfect judgment?

434. Examine the doctrines of the empiricist philosophers in their relation to a theory of knowledge.

435. What is the value of the principle of the "Unity of Nature" for an attempt at explanation of the phenomena of experience?

436. Carefully consider the fundamental assumptions which must be made in order to rationalise experience.

437. In what way is the idea of Uniformity in Nature attained?



## GENERAL NATURE OF INDUCTION

### HINTS.

1. A SYNOPSIS of the views of Induction described in Chapter II. will well repay the work.
2. Get a clear idea of what the proper method and nature of induction are, and then find in what the various logicians discussed *differ* from this.
3. There are a few terms the exact meaning of which is often missed, as "Perfect" and "Imperfect" Induction, Collocation, Colligation, etc.

### QUESTIONS.

438. State concisely Bacon's doctrine of *Idola*, giving examples, and consider its worth as an analysis of the causes of error. [L.—B.A. HONS.]
439. Critically consider the various views that have been advanced respecting the logical form of Induction. [L.—B.A. HONS.]
440. What were the rules of Induction formulated by Bacon? How far are those of Mill an advance on Bacon's? [L.—B.SC.]
441. State what seems to you the precise relation in which Induction stands to Deduction. Show how they co-operate in the scientific study of Nature and of Man. [L.—M.A.]
442. Examine any of the more important theories of Inductive Method. Show how the laws of inductive method have improved from Aristotle to Mill, and trace some of the results in our knowledge of phenomena. [L.—B.A. HONS.]
443. Have the inductive and deductive processes of

reasoning anything in common? What is common to them? In what do they differ? [L.—B.SC.]

444. "Deduction and Induction are continuous operations." Critically examine this assertion. [L.—B.SC.]

445. "The Third is distinctively the *Inductive Figure*." Discuss this view of the nature of the inductive process. [R.U.I.—M.A.]

446. Compare and discuss the views of Mill and Jevons regarding the nature of Induction. [L.—B.A. HONS.]

447. Distinguish Perfect and Imperfect Induction, and discuss the value of the distinction.

448. "Induction is really the inverse process of Deduction" (Jevons). Discuss this.

449. "What belongs, or does not belong, to all the constituent parts, belongs, or does not belong, to the constituted whole." Estimate the value of this axiom of Induction.

450. What do you consider to be the real difference between Induction and Deduction?

451. What is the object of Induction, according to Bacon? Were his methods well calculated to attain it?

452. Carefully explain your conception of the true process of Inductive reasoning.

453. What is Bacon's attitude to Induction by Simple Enumeration?

454. Define Induction, and describe its aim.

455. Examine some attempts to exhibit inductive reasoning syllogistically.

456. Compare the views of Induction held by Jevons and Whewell.

457. In what sense did Newton write "*hypotheses non fingo*"?

458. In what way did Mill attempt to establish the certainty of the principle of Uniformity of Nature? What bearing has this on his general doctrine of induction?

459. According to Whewell inductive truths are of two kinds. Explain.

460. Criticise the view that induction is based on the theory of probability.

461. Consider whether there is any theoretical ground for the distinction in respect to proof between propositions of sequence and propositions of co-existence, and whether there is any practical utility in the distinction. [L.—B.A.]

462. Explain the bearing on the doctrine of induction of the controversy between Mill and Whewell with reference to the discovery of Kepler's Laws.

## ORIGIN OF HYPOTHESES.

### HINTS.

1. A SYNOPSIS here will again be found extremely useful; indeed, this may be said of the study of the whole book.

2. The exact meaning, character and function of Analogy should be carefully considered.

3. Simple enumeration can never prove; but it may suggest hypotheses which are eventually proved.

4. Mill's test of the value of an analogical argument is based on the false assumption that every resemblance and every difference is of equal value, and that the total number of differences are fixed and can be enumerated; but even on his own view the estimate is vitiated by the assumption that the number of unknown properties is known.

### QUESTIONS.

463. In what different senses has the word Analogy been used? What is meant by Reasoning from Analogy? State the rules of analogical reasoning. Give an example of good, and an example of bad, analogical reasoning.

[E.—M.A.]

464. State the general conditions of the Argument from Analogy.

[E.—M.A.]

465. "Analogy is the soul of Induction." Criticise this statement.

[L.—B.SC.]

466. Consider the relations that have been held to exist between analogy and induction. Do you think there is ever proof from analogy? If not, what place does analogy hold in the process of inference?

[L.—B.SC.]

467. What is meant by Induction *per enumerationem*

*simplicem*? It has been said that a complete enumeration of instances furnishes a deductive, not an inductive, argument. State your view on this point, with the reasons on which it is based. [R.U.I.—2ND A.]

468. Define a Hypothesis, and analyse the conditions on which its value depends.

469. Compare the range of science and the range of hypothesis.

470. Exemplify the bearing on a hypothesis founded on analogy which may be possessed by an attempt to prove that noticed differences in the compared phenomena are unessential.

471. In what classes of ways are hypotheses suggested? Exemplify.

472. Induction by simple enumeration can never lead, in itself, to more than an empirical law. Discuss this.

473. On what does the strength of an argument from Analogy depend?

474. Discuss the nature of the problem to be solved in attempting to establish reciprocity of relations.

475. From observation, many instances of male birds of certain species having bright and female dull feathers have been gathered. Discuss the methods by which one would attempt to establish that all male birds of these species have bright and all female birds dull feathers.

476. In what relation does analogy stand to enumerative induction? Does the former necessarily depend on the latter?

477. I have discovered that A resembles B in possessing similar qualities  $m, n, p$ , while it differs from B in possessing  $y$  where B possesses  $z$ . Is it possible to measure the value of an argument founded on these resemblances?

## DEVELOPMENT OF HYPOTHESES.

### HINTS.

1. HYPOTHESIS is *invariably* the first step in the inductive process.
2. There are *no rules* for formation of hypotheses.
3. But there are conditions which must be observed to give them any value.
4. Learn "kinds" of hypotheses.
5. Destruction of one of two rival hypotheses does not prove the other, except when no third hypothesis is possible.

### QUESTIONS.

478. When has hypothesis a scientific value? State and exemplify the rules of Analogical reasoning. [E.—M.A.]
479. Can any general criteria for the construction and employment of Hypotheses be laid down? What do you understand by *simplicity* in regard to Hypothesis, and how far do you think its simplicity is a mark of excellence in any hypothesis? [L.—B.A.]
480. Distinguish hypothesis from theory. Explain the use of hypothesis in scientific procedure. Show, by a concrete example, how far the imagination, and how far the reason, has entered into the construction of a workable hypothesis. [L.—B.A.]
481. By what criteria would you test all hypotheses? [L.—B.A.]
482. Unfold the nature of hypothesis, assigning (if you can) a definite meaning to the expressions "legitimate hypothesis" and "vera causa." [L.—B.A.]

483. Is hypothesis an essential factor in inductive investigation? [L.—B.A.]

484. Compare the function of hypothesis in Mathematical and in Physical Science. [L.—B.A. HONS.]

485. What do you consider the value of Hypothesis in scientific investigation? Distinguish various kinds of Hypothesis, and estimate their relative value. [L.—B.SC.]

486. Can any rules for inventing hypotheses be formulated? Explain.

487. "That hypothesis is invalid, therefore worthless."

"That hypothesis is, *on the face of it*, invalid, for it is formed in contradiction to known facts, and is therefore worthless."

"That hypothesis is pure guess, suggested by a man ignorant of the science, and absolutely without any observations supporting it—therefore worthless."

Annotate the above.

488. When is a hypothesis established? Distinguish the terms Theory and Hypothesis.

489. Distinguish Hypothesis of *Law* and of *Cause*.

490. Exemplify the utility of false hypothesis.

491. Is it more correct to speak of the *Hypothesis* or the *Theory*, of Gravitation, of Light undulations, of Conservation of Energy, of Surds, of Heredity?

492. State and discuss Newton's Rules of Philosophising.

493. Explain "vera causa," "working hypothesis," "crucial instance," "legitimate hypothesis," and "descriptive hypothesis."

494. Is it a valid objection to a hypothesis that it is of a very complex character?

495. If a hypothesis is found to contradict a fact, must it be forthwith abandoned?

496. In what sense may prevision be said to be the test of true theory?

## ANALYSIS OF THE GIVEN.

### HINTS.

1. OBSERVATION and Experiment have been viewed in these relations :—

- (a) As opposed, Observation passive, Experiment active.
- (b) As opposed, Observation “natural,” Experiment “artificial.”
- (c) Experiment as a mode of Observation.
- (d) Experiment as a species contained under genus Observation.

In the strictest sense (c) and (d) are correct, for there is no incompatibility between Observation and Experiment as (a) and (b) suggest; both processes are partly natural and passive and partly artificial and active.

2. The examples in the *Manual* (pp. 122-41) should be regarded as specimens of the logical analysis of scientific procedure. Each student should select other examples and analyse them in a similar way.

3. Mill's Methods must be known, not so much for their intrinsic value, as for their traditional claim.

4. Note the effects of “Plurality of Causes,” “Intermixture of Effects,” and “Counteracting Causes” on the value of Mill's Methods.

### QUESTIONS.

497. Select any of the great conclusions of modern science, and show how hypothesis has given rise to discovery, tracing the stages by which approximate certainty has been reached.

[L.—B.SC.]



498. What are the Inductive difficulties in arguing from a negative? Give appropriate examples. [E.—M.A.]

499. Explain the nature and defects of induction "*per enumerationem simplicem*." Compare it with induction by "method of agreement." [V.—I. B.A. & SC.]

500. State the Experimental Methods, and deduce them from the ultimate Postulate of Inductive Logic. [E.—M.A. HONS.]

501. Explain the methods by which a scientific investigator seeks to reach accurate observation. Is a single observation ever sufficient in scientific research? [L.—B.SC.]

502. State the canons of the method of agreement and difference, and point out the precise function of these methods in the theory of scientific investigation. [L.—B.SC.]

503. Discuss the logical value of Mill's Method of Agreement, considering more particularly whether his symbolic representation conforms to the actual processes of scientific discovery. [L.—B.A. HONS.]

504. Compare the respective advantages of Observation and Experiment, with reference to recent psychological inquiry. [L.—B.SC.]

505. How far has the elaboration of the methods of research by modern inductive logic assisted the discovery of the laws of Nature? Give illustrations in support of your statements. [L.—B.A. HONS.]

506. *Exceptio probat regulam*. On what facts is this maxim based? How far is it valid? and where does it fail? [L.—B.A. HONS.]

507. Distinguish Experiment from Observation; and show, by examples, how the several methods of experimental research have been of use in scientific discovery. [L.—B.SC.]

508. What are the more important objections which have been brought against the Methods of Induction formulated by Mill? Give your view of the value of these methods. [L.—M.A.]

509. What are the general conditions of accurate  
*W. Log. Q.*

observation? Are they susceptible of formulation in definite rules? Are they ever completely realised?

[L.—B.A. HONS.]

510. The Inductive Methods have been called Weapons of Elimination. Discuss the appropriateness of the description.

[L.—B.A. HONS.]

511. Discuss the relation of Hypothesis to Observation, and examine the following: "No theorising apart from observation, and no observing save in the light of theory."

[L.—B.SC.]

512. Distinguish Observation from Experiment, indicating the conditions under which the former may be accurately pursued, and the latter simplified and tested.

[L.—B.A. HONS.]

513. Criticise Mill's Canons of Induction, and state in what way they may be amended.

[L.—B.SC.]

514. State the difficulties in the way of proving the following propositions, and indicate any method of investigation applicable to the case of each:—

(1) The carriage was not torn till after the front wheels came off.

(2) Koch's fluid is a cure for consumption.

(3) The death of the trees planted in the streets is due to gas-poisoning.

[A.—M.A.]

515. In the course of his investigations in the laboratory A comes across a phenomenon new to him. (a) He wants it repeated: how does he set about it? (b) He finds that under certain conditions he can generally reproduce it, but sometimes fails: how does he find the cause of failure? (c) Suppose him to be able to repeat it at will, how does he proceed if he wants to explain it?

[C.G.H.—B.A.]

516. To what uses are the several Inductive Methods appropriate? How does Plurality of Causes affect the Methods? Consider the allegation that the Methods are useless, for no discoveries have ever been made by their means.

[C.G.H.—M.A.]

517. Can the Methods of Induction be reduced to one method? Are they logically valid?

[ST. A.—L.L.A.]

518. Examine the following, giving explanation of the terms involved in it: "There is one fundamental mode of Proof—Agreement through all nature—by which all ultimate laws are established, including Causation. There are several derivative, deductive, or dependent Methods of Proof, the special Methods of Elimination—Agreement, Difference, Variations; these are called by courtesy Inductive Methods; they are more properly Deductive Methods available in Inductive investigations."

[L.—B.A. HONS.]

519. If  $ABC$  has been followed by  $xyz$ , and  $BC$  by  $yz$ , are we entitled to the conclusion that  $A$  is the cause of  $x$ ? Answer fully.

[L.—B.SC.]

520. Discuss some of the difficulties met in attempting to record observations.

521. Under what circumstances, if any, would inability to find a thing prove its non-existence?

522. What is a negative experiment? What are the particular difficulties connected with negative experiments?

523. Describe fully the Method of Qualitative Analysis.

524. Does the popular saying "Exceptions prove the rule" possess any scientific value?

525. Exemplify the Method of Induction in a case in which a hypothesis is established by observation.

## QUANTITATIVE DETERMINATION.

### HINTS.

1. MILL'S treatment of induction was purely qualitative, and this is sufficient in itself to show its inadequacy as an analysis of scientific method. Mill's influence, however, has been operative in restricting both English text-books and examinations very largely to qualitative methods with an occasional excursion into the field of mathematical probability. The sections on Measurement (§§ 156, 158) are, however, of considerable importance, and should be carefully mastered.

2. The logical basis of estimates of probability should be clearly grasped.

3. In actual life we are very seldom reduced to a bare calculation of chances by comparison of mere number of instances; we nearly always can weigh the instances to some account as well as count them. It is useless to appeal to simple probability in any individual case.

### QUESTIONS.

526. Discuss the foundations on which the rules have been based for estimating probabilities. [L.—M.A.]

527. Explain the use of Standards and Units in reaching quantitative results. [L.—B.A. HONS.]

528. What theory of the grounds of probability seems to you most satisfactory? Give your reasons. [L.—B.SC.]

529. Explain the logical grounds on which we are, in certain cases, justified in reaching a probable conclusion, the probability of which is represented by a fraction.

[L.—M.A.]

530. Are all inferences of Probability based upon Experience? Consider the question with reference to the following cases:—

(a) The probability that A B will attain to the age of 40.

(b) The probability of throwing two sixes with a pair of dice. [L.—B.A. HONS.]

531. What different views have been held as to the relation of Probability to Belief? How would you define this relation? [L.—M.A.]

532. What is a coincidence? and how can it be distinguished from a real connection of facts? [L.—B.A.]

533. Explain what is meant by a residual phenomenon. In what class of investigations may residual phenomena be expected to appear? Illustrate the importance of the discovery of such phenomena. [L.—B.SC.]

534. If a logician holds that no result of induction is absolutely certain, can he consistently still distinguish between inductive and probable reasoning? [L.—B.SC.]

535. State briefly and compare the general grounds that have been adduced for the quantitative methods of estimating Probability. [L.—B.A. HONS.]

536. "Every argument in favour of a conclusion, however flimsy and slight, adds probability to it." Examine and state generally the manner in which you take the probabilities of premises to be related to the probability of the conclusion drawn from them. [L.—B.A. HONS.]

537. Analyse the conceptions of Average and of Mean, with a view to the possibility of keeping them distinct from one another. [L.—M.A.]

538. Are all errors in measurement best met by application of the Theory of Probability?

539. If there is no chance in Nature, what room is there for a theory of probability?

540. Given seven logs of wood, five of which float in water and two do not, estimate the degree of probability that a person, assuming him to have no other knowledge of the

properties of wood, will in one trial select from these a log which does not float.

541. Given that on the average it freezes in England on ten nights between June 1st and October 18th, on how many occasions per annum may we expect concurrence of frost and full moon between these dates, reckoning the lunar month at 28 days?

542. Supposing that it is 9 to 7 against a person A who is now 35 years of age living till he is 65, and 3 to 2 against a person B now 45 living till he is 75; find the chance that one at least of these persons will be alive 30 years hence.

543. A speaks truth 3 times out of 4, and B 7 times out of 10; they both assert that a white ball has been drawn from a bag containing 6 balls all of different colours; find the probability of the truth of the assertion.

544. From 20 tickets marked with the first 20 numerals, one is drawn at random; find the chance that it is a multiple of 3 or of 7.

545. What is the basis of the methods for determining true magnitude?

546. Explain and exemplify the Methods of Means and of Least Squares.

## EXPLANATION OF THE GIVEN.

### HINTS.

1. THE popular and the scientific modes of explaining should be noted.

2. Note:—

(a) The object of all Induction is Explanation.

(b) All Induction is Generalisation.

(c) All Generalisation is Induction.

3. There is *only one* mode of explaining, and that is a complete statement of the conditions of the phenomena to be explained. Mill describes three methods, but at bottom they are one in so far as they are truly explanation.

4. Ability to rightly call a Truth *Necessary* implies a complete analysis of its conditions—*i.e.* an explanation of them.

### QUESTIONS.

547. What do you understand by a Necessary Truth? By what tests would you distinguish necessary truths from probable ones? Give illustrative instances of the difference.

[L.—B.SC.]

548. What are meant by Empirical Laws, Derivative Laws, and Laws of Nature? Explain the statement that empirical laws commonly depend on collocations.

[V.—I. B.A. & SC.]

549. What is an Explanation? and wherein does it differ from a Proof? Does everything admit of explanation? and if not, where does explanation cease? Discuss this.

[V.—I. B.A. & SC.]

550. Examine the following: "Geometry is built on

hypotheses: it owes to this alone the peculiar certainty supposed to distinguish it. In any science whatever, by reasoning from a set of hypotheses, we may obtain a body of conclusions as certain as those of geometry.

[V.—I. B.A. & SC.]

551. Consider the *necessity* attaching to the conclusions of Mathematical Science and Natural Science respectively.

[E.—M.A.]

552. What does the logician understand by Explanation? What different kinds are there? Can we be certain that any scientific explanation is complete and final?

[L.—B.A.]

553. What do you understand by *Proof*? On the basis of your explanation, consider how far it is possible to *prove* a law of nature by appeal to facts.

[L.—M.A.]

554. *Vere scire est per causas scire*. How far would you accept this statement as satisfactory, and for what reasons?

[L.—B.SC.]

555. Bring out the logical peculiarities of mathematical reasoning, and inquire whether it is radically distinct from other forms of scientific reasoning.

[L.—B.A.]

556. "Approximate generalisations may be converted into accurate generalisations equivalent to them." [L.—B.SC.]

557. What do you understand by Necessary Truths? Are they in all cases axiomatic? Would you distinguish between different kinds of necessity?

[L.—B.SC.]

558. What would you understand by the "explanation of a coincidence"?

[L.—B.A.]

559. Illustrate the several ways in which facts and generalisation of facts may be explained. Are all modes of scientific explanation reducible to one principle?

[L.—B.A. HONS.]

560. Is there any such thing as a "necessary truth" in Science? Give the grounds of your opinion.

[L.—B.SC.]

561. *Eadem certitudo exigenda non est in omnibus scientiis*. Are there different kinds of certainty? Discuss the principle quoted.

[R.U.I.—B.A.]

562. Explain carefully the meaning of the word *Law* in



Science (*e.g.* the Law of Gravitation), and discuss whether the word is used in the same sense in Logic (*e.g.* Laws of Thought) or in Mathematics (*e.g.* the law of a curve).

[C.G.H.—B.A.]

563. Explain exactly what you understand by *logical necessity*, comparing that notion with the notions of *mathematical necessity*, *physical necessity*, and *moral necessity*.

[L.—B.SC.]

564. Explain and discuss the following: "The opposition (*i.e.* in respect to Sciences) is not between the terms Deductive and Inductive, but between Deductive and Experimental."

[L.—B.A.]

565. What is an Axiom as distinguished from (*a*) a Theorem, (*b*) an Hypothesis? Would it be possible to regard the Axioms of Geometry as exceptionally well verified Hypotheses?

[L.—B.A. HONS.]

566. On what conditions is it possible to explain?

567. What is the relation of induction, explanation, and generalisation?

568. What do you understand by the Principle of Continuity?

569. Distinguish different kinds of explanation.

570. Indicate objections to an explanation of all phenomena by an appeal to the laws of mechanics.

571. Would you regard the following as satisfactory? If not, why not?—A, B, C, D, E, all possess  $x$ ; F, G, H, . . . Z, all resemble A, B, C, D, E, in a very large, indefinite, number of particulars; hence on examination we shall find that they possess  $x$ , and we may generalise that all members of the class containing A . . . Z will possess  $x$ .

572. Examine the force of this argument: "The judgment *S is not P* is inconceivable; therefore the truth of the judgment *S is P* is necessary."

573. Discuss the value of an empirical generalisation.

574. "*Whatever is inconceivable must be false.*" According to some logicians this is an *a priori* fallacy; according to others it is, when rightly interpreted, the universal postulate of reasoning.

[L.—B.A. HONS.]

## METHOD.

### HINTS.

1. METHOD in the abstract is simply good arrangement. If the student has mastered the *Manual*, or made a synopsis of it, he will be better in a position to understand the practical application of the rules of Method. It will be obvious to all that it was better to discuss Propositions before Syllogisms and Hypotheses before Explanation, and this rational ordering is the subject-matter of Method.

2. The laws of Method are applicable to every case of continued statement, however brief. For example, in answering a question some such order as the following may advisably be followed :—

- (1) General statement of the problem.
- (2) Analysis into its parts.
- (3) Full treatment of each part separately, and in order.
- (4) Synthesis of the results.
- (5) General statement showing that the problem has been solved.

3. Descartes' "Rules of Method" and Leibniz on "Knowledge" are worth attention.

### QUESTIONS.

575. Bring out and illustrate from the recent history of the sciences the importance of an adequate system of scientific terms. Compare the physical and the moral sciences under this aspect. [L.—B.SC.]

576. Compare the analytic methods of discovery and of instruction.

577. Explain the statement "analysis in extension is synthesis in intension."

578. Criticise the methods which obtain in Euclid, explaining in any case in what the fault consists.

579. What seems to you the right place of Definition in a system of Logic? [L.—B.SC.]

580. (a) State Descartes' rules of logical method, and (b) annotate the following: "I inquired in general into what is essential to the truth and certainty of a proposition; for since I discovered one which I knew to be true, I thought that I must likewise be able to discover the ground of this certitude." [E.—M.A.]

581. "The problem of Inductive Logic may be summed up in two questions: how to ascertain the laws of Nature; and how, after having ascertained them, to follow them into their results." Indicate generally the scientific modes of answering these questions. [R.U.I.—M.A. HONS.]

582. Explain: "Syllogistic procedure is *synthetic*; the inductive may be called *analytic*." [R.U.I.—2ND ARTS.]

583. State the use and the criterion of a good classification, and the distinction between a descriptive terminology and a nomenclature. "Our classifications are fictions; but, if sound, they are fictions founded upon facts." What are *kinds*? [R.U.I.—M.A. HONS.]

584. Discuss: "All deductive inference is hypothetically necessary." "Logical truth is therefore neither more nor less than *consistency*, and all rules for it will be rules of consistency." [R.U.I.—B.A. HONS.]

585. Point out the advantages of "Experiment" over "Observation"; and show what methods must be used in those sciences in which artificial experiment is impossible or limited. [B.—2ND B.A.]

586. Illustrate the distinction between the Analytic and Synthetic methods. Why is the one called *progressive* and the other *regressive*? [CAL.—M.A.]

587. Unfold the relation in which the use of Language stands to thinking *clare et distincte*, and show how the

demand for scientific precision in the use of words has prevented the rise of error. [L.—B.SC.]

588. How many distinct methods of experimental research does logic recognise? Give examples of each and show how they co-operate. [L.—B.A.]

589. Discuss the relation between the processes called Induction and Deduction on the one hand, and those called Analysis and Synthesis on the other. [L.—B.SC.]

590. "Syllogism and Induction correspond to the two great aspects of existence or ways in which things are known." Examine critically the logical implications lying in this Aristotelian doctrine. [E.—M.A.]

591. Briefly discuss the claim of method to be included as a separate branch of logic.

592. Consider the basis of a good method, and say what value you attach to Descartes' Rules of Method.

593. When is knowledge *adequate*? Distinguish from knowledge called (a) *distinct*, (b) *intuitive*.

594. Which is the more satisfactory, a positive or a negative proof? Why?

## FALLACIES.

### HINTS.

1. THERE are few divisions of Logical doctrine which more often provide a stumbling-block than this.

2. If you are required to classify any fallacious argument, an analysis will very frequently reveal the fact that it may legitimately be classed under several heads of whatever system of classification you adopt. It is not in the classification, but in the *reason* for it, that the virtue of an answer inheres.

3. In such a case it is advisable to point out the several ways of classifying possible.

4. Specify as nearly as possible the exact error committed. Thus, prefer Fallacy of Undistributed Middle to the more general *Quaternio Terminorum*.

5. You should be able to discuss the best basis for a system of classification of fallacies.

6. You should be familiar with all the technical names of kinds of fallacy.

7. Every argument offered for criticism is not necessarily fallacious.

### EXAMPLES.

1. Point out the misinterpretations to which the following sentences might be liable:—

(1) He went to London and then to Brighton by express train.

(2) Did you make a long speech at the meeting?

(3) How much is five times seven and nine?

Any error will be a "Fallacy of Accent" (p. 252).

In (1) it is not clear whether he went to London *by express train*, as well as to Brighton, or not.

(2) The question may be intended to elucidate whether you made a *speech*, whether it was *long*, or whether it was made at the meeting.

(3) Does this mean  $5 \times 7 + 9$  or  $5(7 + 9)$ ?

2. Examine the following :—

- (a) Books are a source both of instruction and amusement. A table of logarithms is a book; therefore it is a source both of instruction and amusement.
- (b) If ye were Abraham's children, ye would do the works of Abraham.
- (c) A man that hath no virtue in himself ever envieth virtue in others; for men's minds will either feed upon their own good or upon others' evil; and who wanteth the one will prey upon the other. [BACON.]
- (d) The object of war is durable peace; therefore soldiers are the best peace-makers.
- (e) Improbable events happen almost every day; but what happens almost every day is a very probable event; therefore improbable events are very probable events. [WHATELEY.]

(a) This is an example of the Fallacy of Division (pp. 247-8). The middle term "books" is used collectively in the major, but distributively in the minor. It might also be classed as a Fallacy of Four Terms (p. 260).

(b) This is an Enthymeme of the First Order, and the suppressed premise involves a Fallacy of Illicit Generalisation: it would read "All children of Abraham do his works," which is, of course, an unwarrantable assumption.

It may be treated in another way. If "children of Abraham" is taken in the metaphorical sense intended—as those who have the spirit of Abraham, *i.e.* who *do* do his works—it may be considered formally valid.

All children of Abraham are doers of his works,

Ye are not doers of his works,

∴ Ye are not children of Abraham.

But this argument conveys no real information; it is a mere restatement in metaphorical language of what is

plainly stated in the minor premise; and the conclusion is implicitly in its actual sense used as the minor premise of a syllogism condemning the persons who are proved not to be Abraham's children, as thus:—

All not Abraham's children are outside the fold,  
 Ye are not Abraham's children,  
 ∴ Ye are outside the fold.

(c) The quaint metaphorical language is somewhat ambiguous. If "envying virtue in others" is exactly equivalent to "preying on others' evil," the argument is valid:—

All men's minds either feed on their own good or on others' evil,

These are men whose minds do not feed on their own good (not possessing any),

∴ These men's minds feed on others' evil (*i.e.* these men, without virtue, are envious of others' virtue).

(d) The argument depends on a series of illicit generalisations.

Thus (1) durable peace is seldom or never the sole object of war, and (2) it is certainly not the object of some wars. It would be correct to say, "The object of some wars is durable peace," put logically, "Some war is for durable peace."

(3) Granting for a moment that war has as object peace, soldiers as soldiers can only be the best peace-makers in so far as this object is *best* obtained by war.

(e) A Fallacy of Confusion. It does not fall directly into any of the Aristotelian classes. It is most nearly analogous to the Fallacy of Division.

Expressed syllogistically it runs:—

What happens almost daily is a very probable event,  
 Improbable events happen almost daily,  
 ∴ Improbable events are very probable.

On first sight this appears to be a collective use of the minor term in the premise with a distributive application in the conclusion. But the minor premise does not mean that improbable events *as a whole* happen almost daily, but only that one improbable event in the total number does so.

3. Discuss the difficulties of achieving a complete classification of fallacies.

First define a Fallacy (p. 227). Any classification must seek as far as possible to conform to the rules of Logical Division (vol. i., p. 127). But all Fallacies are forms of Confusion (see vol. i., p. 30), and it is frequently impossible to fix the actual cause of confusion, *i.e.* to say what law has been broken. Hence the classes will overlap (see pp. 230-1).

### QUESTIONS.

595. Explain and exemplify the following fallacies, and refer each to its proper class: *Petitio principii*, *Ignoratio elenchi*, *Fallacia accidentis*, *Non causa pro causa*, *Post hoc ergo propter hoc*. [E.—M.A.]

596. Give Bacon's classification of Fallacies, with explanation. [E.—M.A.]

597. Define Fallacy, and give a classification of Fallacies. Specially illustrate the Fallacy of Composition and the Fallacy of Accident. [V.—I. B.A. & SC.]

598. "Metaphors are not reasons." Discuss this dictum. [V.—I. B.A. & SC.]

599. Describe the conditions of faultless reasoning. Also state broadly the distinction between Fallacies incident to Deductive and those incident to Inductive Inference. Illustrate your meaning. [E.—M.A.]

600. Examine the following: "Every bird comes from an egg, every egg comes from a bird, therefore every egg comes from an egg." [L.—B.A.]

601. If Jack is a good boy he will do what he is told; he is a good boy (for if he will do as he is told he is a good boy); therefore he will do as he is told.

[From MISS JONES' "LOGIC."]

602. The sea was the place where the incidents of my story occurred; there is the sea; therefore my story is true.

[From MISS JONES' "LOGIC."]

603. "If thou wast never at Court, thou never sawest good manners; if thou never sawest good manners, then thy manners must be wicked; and wickedness is sin, and sin is perdition. Thou art in a parlous state, shepherd."



Draw out the reasoning here in full. Indicate and describe any fallacies you observe. [E.—M.A.]

604. Examine, "All responsible beings are rational; responsibility increases with the increase of rationality; some dogs are more rational than some men; therefore some dogs are more responsible than some men." [L.—B.A.]

605. Examine, "If I am to pass this examination, I shall pass it, whether I answer correctly or not; if I am not to pass it, I shall fail, whether I answer correctly or not; therefore it is of no consequence how I answer the questions." [L.—B.A.]

606. Discuss the principles involved in the chief attempts at classification of fallacies. [L.—B.SC.]

607. Write a brief note on the logical treatment of fallacies. What help, if any, can the logical treatment receive from a psychological or psycho-physiological explanation of their origin? [L.—B.SC.]

608. State and compare some of the most important methods of classifying fallacies known to you. [L.—B.A.]

609. Amplify, and apply a logical test to, the following arguments:—

(a) The theory of evolution is true, because it is accepted by every scientific biologist.

(b) A good temper is a sign either of a good conscience or of a good digestion; therefore the conscientious and the healthy will always possess a good temper. [L.—B.A.]

610. Examine:—

(a) To call a person an animal is to speak the truth; therefore to call him an ass (which is to call him an animal) is to speak the truth.

(b) The laws of Nature never can be broken. Social law is a part of the general system of Nature; therefore it cannot be broken. [L.—B.A.]

611. Examine logically the following arguments:—

(a) If truthfulness is never found save with scrupulousness, and if truthfulness is incompatible with stupidity, it follows that stupidity and scrupulousness can never be associated.

- (b) You say that there is no rule without an exception. I answer that, in that case, what you have just said must have an exception, and so prove that you have contradicted yourself.
- (c) Knowledge gives power; consequently, since power is desirable, knowledge is desirable. [L.—B.A. HONS.]

612. What are the more common errors in inductive investigation? [L.—B.A. HONS.]

613. Are inductive errors susceptible of definite classification like errors in deduction? Are they, strictly speaking, logical fallacies? [L.—B.A. HONS.]

614. Explain the following fallacies, giving an example of each:—*ignoratio elenchi*, *non causa pro causa*, *a dicto secundum quid*, ἀμφιβολία, false analogy, mal-observation. [L.—B.A.]

615. Examine the logical form, and the validity, of the following arguments:—

- (a) A fish is cold-blooded and breathes by gills; neither of these things is true of a whale; therefore it is not a fish.
- (b) A is never found without B, and B is never found without C; therefore C is never found without A.
- (c) To assault another is wrong; consequently a soldier who assaults another does wrong. [L.—B.A.]

616. Classify, and differentiate, the principal sources of Error; and show, by concrete examples, how they co-operate in the production of erroneous theory. [L.—B.SC.]

617. "It is affirmed that such a man has left off playing the fool. If it is granted, it is implied that he did play the fool formerly. If it be denied, it seems to imply that he plays the fool still." [R.U.I.—B.A.]

618. The fallacy of accident is reckoned among the non-logical fallacies; it is said to be, really, a case of ambiguous middle; it is also said to be the converse of the fallacy *A dicto secundum quid ad dictum simpliciter*. Examine these several statements, explaining the terms employed. [R.U.I.—2ND A. HONS.]

619. "Simple apprehension is always true *per se*. It is

only the judgment which, in the full sense, is logically false." Explain and discuss this statement. [C.G.H.—M.A.]

620. Enumerate the leading Material Fallacies of the older logic, and refer them to their places in Mill's scheme. Illustrate from the history of human thought. [C.G.H.—M.A.]

621. Explain exactly the nature of the fallacies called *Accident*, *Non causa pro causa*, *Argumentum ad hominem*. How far do the rules of Formal logic suffice for their detection? [L.—B.SC.]

622. Illustrate fallacies incident to faulty definition.

623. Explain the syllogistic rules respecting two negative and two particular premises, pointing out the grounds on which they rest. Do the following break either of these rules?

(a) This person is very learned, and also very sociable; consequently some very sociable persons are very learned.

(b) No man is a proper object of contempt; at the same time no man is perfectly admirable; consequently some beings who are not perfectly admirable are not proper objects of contempt.

(c) The majority of English people have but little literary taste; and the majority of English people read; from which it follows that some who read have but little literary taste. [L.—B.A.]

624. What difference of meaning would you assign to the terms Sophism, Fallacy, Paralogism, and Paradox? [L.—B.SC.]

625. Discuss the question whether the treatment of Fallacies, either wholly or in part, should be excluded from Logic. If excluded, to what other Science or Sciences should they in your opinion be relegated? [L.—M.A.]

## MISCELLANEOUS QUESTIONS.

626. DISTINGUISH between a Genus and a Type. [L.—M.A.]

627. How far does the classification of Predicables coincide with the division into propositions of Existence, Co-existence, Similarity, Succession? Are propositions of Existence recognised in the classification of Predicables?

[L.—M.A.]

628. Define precisely what you understand by (1) Negative Terms and (2) Negative Propositions, showing how you would recognise them, and pointing out the relation of each to its correlative.

“Logic must admit either negative terms or negative propositions, but has no need of both.” Discuss this.

[L.—B.SC.]

629. Supposing you were about to engage in a controversy, explain as systematically as you can the rules of procedure you would desire to lay down beforehand. [L.—B.A. HONS.]

630. To what extent do you think the processes of Immediate Inference and Categorical Syllogism can be rested on the logical laws of Identity, Non-Contradiction, and Excluded Middle?

[L.—M.A., B.A. HONS.]

631. State and discuss the views that have been held as to the proper place of the doctrine of Modality in logical theory.

[L.—B.A. HONS.]

632. What are the possible distinct forms of valid syllogism that can be represented by Eulerian diagrams? Discuss the propriety of this mode of representing propositions and syllogisms.

[L.—M.A.]

633. Distinguish accurately between *contradictory* and *contrary* opposition, in the case (a) of Terms, (b) of Pro-

positions. Is the one kind of Opposition as purely logical as the other? What is Diametrical Opposition? and why is it so called? [L.—B.SC.]

634. Explain at length the meaning, origin, and relation of the terms—Predicate, Predicable, Predicament. How do Kant's Categories differ from Aristotle's? [L.—B.A. HONS.]

635. Distinguish, from a logical point of view, between a *specific* and an *accidental* difference in any two things.

How far are the rules of Logical Division and Definition of use in actual science? [L.—B.SC.]

636\*. Different logicians have assigned as the subject-matter of their science (a) Reasoning, (b) Thinking, (c) Knowing, (d) Speaking. Give what you consider an adequate definition of Logic from each of these points of view, and compare the results. [L.—B.A. HONS.]

637. What is the propositional form in which a definition must be stated? How do you know a definition when you see it? [L.—M.A.]

638. Give some account of any disputes as to the nature and functions of the Copula of a logical proposition. Does comparative grammar throw any light upon the question? [L.—B.A. HONS.]

639. Show that in no case does information that both the premises of a correct syllogism are materially false lead to knowledge that the conclusion is false. [C.—HONS.]

640. Explain the process called Reduction, and discuss the following: "If the other figures are inferior in cogency to the first they ought to be excluded; if they are not inferior their reduction is a superfluity." [L.—B.SC.]

641. Prove the canon of syllogism which says that "the middle term must be distributed at least once in the premises." [MCG.]

642. If for both the premises of a valid syllogism their contradictories are substituted, will the contradictory of the original conclusion be thereby established?

643. Prove the following:—Given a valid syllogism, then in no case will the combination of either premise with the conclusion establish the other premise.

644. Enquire in what figures, if any, the following moods are valid, noting cases in which the conclusion is weakened :—  
 A U I ; Y A Y ; U O  $\eta$  ; I U  $\eta$  ; A  $\omega$  O. [L.—B.A.]

645. Discuss the following :—Any syllogism involving directly an illicit process of major or minor involves indirectly a fallacy of undistributed middle.

646. Give the converse and the contrapositive of “If a straight line falling upon two other straight lines make the alternate angles equal to one another, these two straight lines shall be parallel.” [L.—B.A.]

647. Show that the truth of the Converse does not involve the truth of the Convertend. Show that the truth of Contraries implies the truth of Contradictories, and that the falsity of Sub-contraries implies the truth of Contraries. [R.U.I.—B.A. HONS.]

648. State accurately the respective functions of the Major and the Minor premise. [R.U.I.—M.A.]

649. Show by instances how names tend to become more general or more special in their application. [R.U.I.—B.A.]

650. “The true character of logical particularity requires to be very precisely understood. It is in all respects indefinite.” Discuss this statement, and contrast the logical signification of the word *some* with its uses in ordinary speech. [R.U.I.—B.A. HONS.]

651. The middle term is distributed twice in the premises of a syllogism. To what moods can the syllogism belong? Prove your answer. [R.U.I.—B.A. HONS.]

652. Construct a *Datisi* in Extension, and in Comprehension ; give also, and explain, a symbolical notation of it. [R.U.I.—M.A.]

653. If the opposite of the conclusion be substituted for either premise in a legitimate syllogism, and the new premises be legitimate, the new conclusion will be opposed to the suppressed premise or to its converse. [D.]

654. Determine the modes in the fourth figure on the following hypotheses :—

(a) That the major is particular ;

(b) That the minor is particular ;

(c) That the conclusion is universal.

[D.]

655. Logical name and validity of this argument:—

C is not D, for A is B; and I know that whenever A is not B, C is D. [D.]

656. State the mode and figure of the following syllogism. If not in the first figure, reduce it: "Every candid man acknowledges merit in a rival; every learned man does not do so; therefore every learned man is not candid." [D.]

657. What modes may be common to all figures? Why? [D.]

658. How does the definition of the word "Inference" bear on the conception of the sphere of Logic? Define the various kinds of Inference known to Deductive Logic.

[O.—MODS.]  
659. Show that logic requires a study of the import of terms and propositions. [O.—MODS.]

660. Discuss the "quantification" of the predicate. [O.—MODS.]

661. Examine the following arguments, putting them into syllogistic form, and naming any fallacies they may contain:—

(a) Provided he has been properly taught, he can himself teach; for experience makes experts.

(b) The historical novel is an impossibility; for it proposes to combine fiction with fact, and these are contradictories.

(c) Death is the highest good, for it is the ultimate end of life.

(d) He is innocent, for he has faced his accusers; a guilty man would run away. [L.—B.SC.]

662. Explain fully the limitations of the conclusions obtainable in the third figure of the Syllogism. Are these limitations got rid of by applying Obversion to the premises? [L.—B.A.]

663. Discuss the claim of the Syllogism to cover all forms of deductive reasoning, and examine the logical form of the following:—

(a) Since all fruit except bad fruit is admitted to market, and all fruit except foreign fruit arrives by rail, we know that all fruit which is neither bad nor foreign is admitted and comes by rail.

(b) Seeing that A and B are inseparable, and that C is sometimes found along with B, we know that C and A will sometimes be found together.

(c) The society consists of all our leading journalists, and since it includes some of our politicians, we can infer that the two classes overlap. [L.—B.SC.]

664. Examine the form of the Hypothetical Syllogism, and show how it is related to the Categorical; also discuss the logical form of the following arguments:—

(a) Whenever a certain disease, A, occurs, the group of symptoms *a b c d* are present; now in the present case the symptom *a* is absent, so that we can infer that it is not a case of the disease A.

(b) Floods in the valley are due either to heavy rains or to the melting of the snow. There has been neither of these recently, so we may be sure there will be no flood.

(c) It must be obvious that the stimulus of academic honours is useless, since it is unnecessary for the serious student, and is ineffectual for the indifferent.

[L.—B.SC.]

665. Every English peer is entitled to sit in the House of Lords, and every member of the House of Commons must be elected to Parliament by a constituency; but no one entitled to a seat in the House of Lords is thus elected to Parliament. What can we conclude from these premises about (1) an English peer, (2) any one entitled to a seat in the House of Lords? [MEL.]

666. In the third figure, if the conclusion be substituted for the major premise, what will the figure be? [BAGOT.]

667. In what moods of the syllogism can a subaltern proposition be substituted for its subalternans (universal of same quality) as premise without affecting the conclusion? [JEVONS.]

668. Determine how many universal terms may be in the premises more than in the conclusion. [JEVONS.]

669. Determine in what cases there may be in a syllogism an equal number of universal terms and of particular.

[QUEEN'S COLL. BELFAST.]



670. Determine how many particular terms may be in the premises more than in the conclusion. [JEVONS.]

671. Determine in what affirmative moods the middle term may be universal in the major premise and particular in the minor. [Q. COLL. BELFAST.]

672. Determine in what negative moods the same may occur. [Q. COLL. BELFAST.]

673. From P follows Q; and from R follows S; but Q and S cannot both be true; show that P and R cannot both be true. [DE MORGAN.]

674. If (1) it is false that whenever X is found Y is found with it, and (2) not less untrue that X is sometimes found without the accompaniment of Z, are you justified in denying that (3) wherever Z is found there also you may be sure of finding Y? And however this may be, can you in the same circumstances judge anything about Y in terms of Z? [CROOM ROBERTSON.]

675\*. Is it possible that there should be two syllogisms having a common premise such that their conclusions, being combined as premises in a new syllogism, may give a universal conclusion? If so, determine what the two syllogisms must be. [PROF. NICHOLSON.]

676. Find out the valid syllogisms that may be constructed without using a universal premise of the same quality as the conclusion. [MR. W. E. JOHNSON.]

677. Is it possible that there should be three propositions such that each in turn is deducible from the other two?

[DR. VENN.]

678. If A is true, B is true; if B is true, C is true; if C is true, D is true. What is the effect upon the other assertions of supposing successively (1) that D is false; (2) that C is false; (3) that B is false; (4) that A is false?

[JEVONS.]

679\*. Let X, Y, Z, P, Q, R, be six propositions; given

- (a) Of X, Y, Z, one and only one is true;
- (b) Of P, Q, R, one and only one is true,
- (c) If X is true, P is true;
- (d) If Y is true, Q is true;
- (e) If Z is true, R is true;

Prove, syllogistically, that

(*f*) If X is false, P is false ;

(*g*) If Y is false, Q is false ;

(*h*) If Z is false, R is false.

[C.— HONS.]

680. If the conclusion of a syllogism (not weakened) differs from the minor premise both in quality and in quantity, what can be determined respecting the syllogism ?

681. If the conclusion of a syllogism (not weakened) differs from the major premise both in quality and in quantity, what can be determined respecting the syllogism ?

682. Under what conditions may both premises of a syllogism be changed in quality (but not in quantity) without affecting the original conclusion ?

683. If the conclusion of a syllogism (not weakened) differs from the minor premise in quality only, what can be determined respecting the syllogism ?

684\*. Under what conditions can the contrapositive of each premise be substituted for the premises without affecting the validity of the original conclusion ?

685. If the conclusion of a syllogism (not weakened) differs from the minor premise in quantity only, what can be determined respecting the syllogism ?

686. Under what conditions may both the premises of a syllogism be changed in quantity (but not in quality) without affecting the validity of the original conclusion ?

687. If both premises of a syllogism are changed both in quality and in quantity, is it possible in any case to draw a valid conclusion ?

688\*. Is it ever possible for the contradictory of the conclusion of a valid syllogism (not weakened) together with the contradictory of one premise to yield a valid conclusion ? If so, what relation does it bear to the suppressed premise ?

689. If the conclusion of a syllogism (not weakened) differs from the major premise in quality only, what can be determined respecting the syllogism ?

690\*. Given two valid syllogisms in the same figure, in which the major, middle, and minor terms are respectively the same, show, without reference to the mnemonic verses,

that if the minor premises are contradictories the conclusions will not be contradictories. [DR. KEYNES.]

691. Prove that wherever there is a particular conclusion without a particular premise something superfluous is invariably assumed in the premises. [JEVONS.]

692. What conclusions (if any) can be drawn from each pair of the following sentences taken two and two together?—

- (a) None but gentlemen are members of the club.
- (b) Some members of the club are not officers.
- (c) All members of the club are invited to compete.
- (d) All officers are invited to compete.

Point out the mood and figure in each case in which you make a valid syllogism, and state your reasons when you consider that no valid syllogism is possible. [DR. VENN.]

693. Examine :—We can only be happy in this world by abandoning ourselves to our passions, or by combating them ; if we abandon ourselves to them, this is an unhappy state, since it is disgraceful, and we could never be content with it ; if we combat them, this also is an unhappy state, since there is nothing more painful than that inward war which we are continually obliged to carry on with ourselves ; therefore we can never have in this life true happiness.

[PORT ROYAL LOGIC.]

694. A syllogism is found to offend against none of the syllogistic rules, except that with two affirmative premises it has a negative conclusion. Determine the mood and figure of the syllogism. [INTER-COLLEGIATE—CAMBR.]

695. Determine in what cases it is possible to change the quality (but not the quantity) of one only of the premises of a valid syllogism (not weakened), and still draw a valid conclusion.

696. Is it ever possible to change both quality and quantity of one only of the premises of a syllogism (not weakened), and still draw a valid conclusion?

697. It has been said that *definition* is determined by *induction*. Analyse the characteristics of such induction, and examine how the application of a term is determined on this view. [C.—HONS.]

698. Give a *formal* analysis of the methods of induction,

and examine whether these methods are applicable to other relations than those of cause and effect. [C.—HONS.]

699. "Calculations of probability in general do not express what will actually occur in the future, but only the degree of subjective confidence which we repose in their occurrence." Discuss this statement. [C.—HONS.]

700\*. A bag contains three balls, each of which is known to be red, white, or blue. Is the chance of all three being white  $\frac{1}{10}$  or  $\frac{1}{27}$ ? Give reasons for your answer, and point out how far it depends upon any particular assumption as to the manner in which the bag was originally filled. [C.—HONS.]

701\*. Discuss the logical basis of numeration and of measurement. Examine in particular the possibility and meaning of measuring space and time. [C.—HONS.]

702. Explain the principal rules for the combination of probabilities.

If the odds in favour of X are  $m$  to  $n$  when A is known to be true, and  $m'$  to  $n'$  when B is known to be true, show that they are  $mm'$  to  $nn'$  when both A and B are known to be true. [C.—HONS.]

703. Discuss the relation between Probability and Induction. What view was held by Jevons on this subject? [C.—HONS.]

704\*. Give some account of the processes by which, according to Whewell, science advances in respect of range and accuracy. [C.—HONS.]

705. Does the distinction between uniformities of sequence and of co-existence seem to you fundamental either in Nature or for purposes of Inductive enquiry? Compare the systems of Mill and Bacon in this respect. [C.—HONS.]

706. What do you consider to be the mutual relations of Statistics and Inductive Logic, and how are each of these affected, or supposed to be affected, by the doctrine of Freedom of the Will? [INTER. COLLEGIATE—CAMBR.]

707. Explain the most important conditions that should be observed in conducting an experiment. Are the results of a single experiment, without reference to previous investigations, ever sufficient to establish a scientific truth? [INTER-COLLEGIATE—CAMBR.]

708. Explain fully the ground on which the following conclusion is based: "Nicholas Bound, D.D., rector of Norton, is stated to have died 8 Feb., 1607; it happens that on that very day Nicholas Bond, D.D., president of Magdalen, died. We feel satisfied, therefore, that this was not the correct date of Nicholas Bound's death."

[INTER-COLLEGIATE—CAMBR.]

709. "Every lodger has a vote, so no voter has been forgotten." (1) What premise, major or minor, must be supplied to make this reasoning guilty of Illicit process of the minor? Can you supply any premise which will make it (2) correct, (3) guilty of Illicit process of the major?

[INTER-COLLEGIATE—CAMBR.]

710. In a certain town statistics show that every tradesman is English, and (unless he is unrated) is a dissenter; and that every dissenter is a tradesman. What overstatement, exactly, is made by asserting that every Englishman is rated there? and by denying that there are any dissenters there at all?

[INTER-COLLEGIATE—CAMBR.]

711\*. None of the citizens are at once voters, householders, and lodgers; nor are there any who are neither of the three.

Every citizen is either a voter but not a householder, or a householder and not a lodger, or a lodger without a vote.

Are these statements precisely equivalent? Illustrate your answer by symbolic or diagrammatic methods.

[INTER-COLLEGIATE—CAMBR.]

712. Examine technically the following arguments, pointing out the nature of any fallacy that may be involved in them:—

(a) No mere schoolboy can be expected to understand Constitutional History, and none but schoolboys can be expected to remember dates: so that no one can be expected both to remember dates and to understand Constitutional History.

(b) To be wealthy is not to be healthy; not to be healthy is to be miserable; therefore to be wealthy is to be miserable.

(c) Whatever any man desires is desirable; every man desires happiness; therefore the happiness of every man is desirable.

[INTER-COLLEGIATE—CAMBR.]

713. State and exemplify fallacies incident to *oppositions*. Which kind of opposition is most effective in logic, and why?

Examine the argument: "If a man be rightfully entitled to the produce of his labour, then no one can be rightfully entitled to the ownership of anything which is not the produce of his labour, or the labour of some one else from whom the right has passed to him." [R.U.I.—B.A.]

714. Explain the distinction between semi-logical and material fallacies. Discuss the following arguments, reducing them as far as possible to logical form:—

- (a) If a man is educated, he does not wish to work with his hands. Consequently, if education is universal, industry will cease.
- (b) Giving advice is useless. For either you advise a man what he means to do, in which case the advice is superfluous; or you advise him what he does not mean to do, and the advice is ineffective. [L.—B.A.]

715. Examine:—Protection from punishment is plainly due to the innocent; therefore, as you maintain that this person ought not to be punished, it appears that you are convinced of his innocence. [WHATELEY.]

716. Examine:—He who is most hungry eats most; he who eats least is most hungry; therefore he who eats least eats most.

717. Discuss the nature of the reasoning contained, or apparently intended, in the following sentences:—

- (a) It is impossible to prove that persecution is justifiable if you cannot prove that some non-effective measures are justifiable; for no persecution has ever been effective.
- (b) This deed may be genuine though it is not stamped, for some unstamped deeds are genuine. [C.]

718. Examine the argument in:—

If we are marked to die, we are enow  
 To do our country loss: and, if to live,  
 The fewer men, the greater share of honour. [O.]

719. Analyse logically the following passage: "In all unhealthy countries the greatest risk of fever is run by

sleeping on shore. Is this owing to the state of the body during sleep, or to a greater abundance of miasma at such times? It appears certain that those who stay on board a vessel, though anchored at only a short distance from the coast, generally suffer less than those actually on shore.”—DARWIN, *Voyage of a Naturalist*.

720. Examine critically the following extracts:—

“What would our ancestors say to this, Sir? How does this measure tally with their institutions? How does it agree with their experience? Are we to put the wisdom of yesterday in competition with the wisdom of centuries? (*Hear! hear!*) Is beardless youth to show no respect for the decisions of mature age? (*Loud cries of hear! hear!*) If this measure be right, would . . . it have been reserved for these modern and degenerate times? Besides, Sir, if the measure itself is good, I ask the honourable gentleman if this is the time for carrying it into execution—whether, in fact, a more unfortunate period could have been selected than that which he has chosen? If this were an ordinary measure, I should not oppose it with such vehemence; but, Sir, it calls in question the wisdom of an irrevocable law—of a law passed at the memorable period of the Revolution. . . . Give not, then, your sanction to this measure; for, whatever be its character, if you do give your sanction to it, the same man by whom this is proposed will propose to you others to which it will be impossible to give your consent. I care very little, Sir, for the ostensible measure; but what is there behind? . . . Was the honourable gentleman (let me ask him) always of this way of thinking? Do I not remember when he was the advocate in this House of very opposite opinions? I not only quarrel with his present sentiments, Sir, but I declare very frankly I do not like the party with which he acts. If his own motives were as pure as possible, they cannot but suffer contamination from those with whom he is politically associated. This measure may be a boon to the Constitution, but I will accept no favour to the Constitution from such hands. (*Loud cries of hear! hear!*) I profess myself, Sir, an honest and upright member of the British Parliament, and I am not afraid to profess myself an enemy to all change and all innovation. I am satisfied

with things as they are; and it will be my pride and pleasure to hand down this country to my children as I received it from those who preceded me. . . . The honourable gentleman has taxed me with illiberality, Sir. I deny the charge. I hate innovation, but I love improvement. . . . I dread reform, but I dread it only when it is intemperate. I consider the liberty of the press as the great Palladium of the Constitution; but, at the same time, I hold the licentiousness of the press in the greatest abhorrence. Nobody is more conscious than I am of the splendid abilities of the honourable mover, but I tell him at once his scheme is too good to be practicable. It savours of Utopia. It looks well in theory, but it won't do in practice. . . . The source of that corruption to which the honourable member alludes is in the minds of the people; so rank and extensive is that corruption, that no political reform can have any effect in removing it. Instead of reforming others—instead of reforming the State, the Constitution, and everything that is most excellent—let each man reform himself! let him look at home; he will find there enough to do, without looking abroad, and aiming at what is out of his power. (*Loud cheers.*)"—SYDNEY SMITH, *The Noodle's Oration*.





Titles underlined are those of New Books and New Editions published during the year ending March 1911.

---

## Select List of Books

IN THE

# University Tutorial Series.

---

University Tutorial Press L<sup>d</sup>.

W. B. CLIVE, 157 DRURY LANE, LONDON, W.C.

---

### CONTENTS.

---

	PAGES		PAGES
Education, etc. . . . .	2, 3	English Text-Books . . . .	10
Mathematics and Mechanics	3-5	Philosophy . . . . .	11
Biology . . . . .	5	Modern History . . . . .	11
Physics . . . . .	6	Geography . . . . .	12
Chemistry, etc. . . . .	7	Roman and Greek History	12
French . . . . .	8	Latin and Greek Text-Books	13
English Classics . . . . .	9	Latin and Greek Classics	14, 15

---

*The General Catalogue (64 pages); Sectional Catalogues in (1) Mathematics and Mechanics, (2) Science, (3) English, History and Geography, (4) Education and Philosophy, (5) Classics, (6) French; and Special Catalogues for London University and other Examinations, may be had post free on application.*

MARCH 1911.

## Mathematics and Mechanics—continued.

- Arithmetic, The Primary.** Edited by WM. BRIGGS, LL.D., M.A., B.Sc., F.R.A.S. An Introductory Course of Arithmetical Exercises. In Three Parts. Parts I. and II., each 6d. Part III., 9d. With Answers, each Part 1d. extra.  
i. "Thoroughly suited for use in elementary schools generally."—*School Guardian*.
- Astronomy, Elementary Mathematical.** By C. W. C. BARLOW, M.A., B.Sc., and G. H. BRYAN, Sc.D., M.A., F.R.S. 6s. 6d.
- Coordinate Geometry.** By J. H. GRACE, M.A., F.R.S., and F. ROSENBERG, M.A., B.Sc. 4s. 6d.  
An elementary treatment of the straight line, circle, and conic.
- Dynamics, The Tutorial.** By WM. BRIGGS, LL.D., M.A., B.Sc., and G. H. BRYAN, Sc.D., F.R.S. *Second Edition*. 3s. 6d.
- Geometry, Theoretical and Practical.** By W. P. WORKMAN, M.A., B.Sc., and A. G. CRACKNELL, M.A., B.Sc., F.C.P.  
PART I. Covering Euclid, I., III. (1-34), IV. (1-9). 2s. 6d.  
PART II. Covering Euclid, II., III. (35-37), IV. (10-16), VI. 2s.  
PART III. Covering Euclid XI. 1s. 6d.  
"The three parts now issued form an excellent work."—*School World*.  
This work is also published in two volumes under the titles :—  
**Matriculation Geometry** (Equivalent to Euclid I.-IV.). 3s. 6d.  
**Intermediate Geometry** (Equivalent to Euclid VI., XI.). 2s. 6d.
- The School Geometry.** Being an edition of *Geometry, Theoretical and Practical*, Parts I. and II., specially adapted for ordinary school use. In one vol., 3s. 6d. In two Parts, each 2s.
- Introduction to the School Geometry.** 1s.  
"The reputations of this series, the authors, and the press from which these books are issued, are a sufficient guarantee of their value. Excellent in every respect."—*Schoolmaster*.
- Graphs : The Graphical Representation of Algebraic Functions.**  
By G. H. FRENCH, M.A., and G. OSBORN, M.A., Mathematical Masters of the Leys School, Cambridge. *Second Edition*. 1s. 6d.
- Graphs, Matriculation.** (Contained in *The New Matriculation Algebra*.) By C. H. FRENCH, M.A., and G. OSBORN, M.A. 1s.
- Hydrostatics, Intermediate.** By WM. BRIGGS, LL.D., M.A., B.Sc., F.R.A.S., and G. H. BRYAN, Sc.D., F.R.S. 3s. 6d.
- Hydrostatics, The Matriculation.** (Contained in *Intermediate Hydrostatics*.) By Dr. BRIGGS and Dr. BRYAN. 2s.
- Mechanics, The Matriculation.** By Dr. WM. BRIGGS and Dr. G. H. BRYAN. *Second Edition*. 3s. 6d.

**Mathematics and Mechanics—continued.**

**The Right Line and Circle (Coordinate Geometry).** By Dr. BRIGGS and Dr. BRYAN. *Third Edition.* 3s. 6d.

**Statics, The Tutorial.** By Dr. WM. BRIGGS and Dr. G. H. BRYAN. *Third Edition.* 3s. 6d.

**Tables, Clive's Mathematical.** Edited by A. G. CRACKNELL, M.A., B.Sc. 1s. 6d.

**Trigonometry, The Tutorial.** By WM. BRIGGS, LL.D., M.A., B.Sc., and G. H. BRYAN, Sc.D., F.R.S. *Second Edition.* 3s. 6d.

**Biology.**

**Botany for Matriculation.\*** By Professor F. CAVERS, D.Sc. 5s. 6d. Also in Two Parts. Part I. 3s. 6d. Part II. 2s. 6d.

This book is especially written to cover the requirements of the London University Matriculation Syllabus in Botany.

"It would not be easy to get a more comprehensive account of the most important facts relating to plant life and the structural details of the commoner flowering plants than this excellent manual contains."—*Education.*

**Plant Biology.\*** An elementary Course of Botany on modern lines. By F. Cavers, D.Sc., F.L.S. 3s. 6d.

"The freshness of treatment, the provision of exact instruction for practical work really worth doing, and the consistent recognition that a plant is a living thing, should secure for Professor Cavers' book an instant welcome."—*School World.*

**Plants, Life Histories of Common.\*** An Introductory Course of Botany based on the study of types by both outdoor and indoor experiment. By F. CAVERS, D.Sc., F.L.S. 3s.

"The author is to be congratulated on the excellent features of his book, which may be summarised as a clear diction, a logical sequence, and a recognition of the essentials."—*Nature.*

**Botany, A Text-Book of.** By J. M. LOWSON, B.Sc., F.L.S. *Fifth Edition.* 6s. 6d.

"It represents the nearest approach to the ideal botanical text-book that has yet been produced."—*Pharmaceutical Journal.*

**Zoology, A Text-Book of.** By H. G. WELLS, B.Sc., and A. M. DAVIES, D.Sc. *Fifth Edition.* 6s. 6d.

"It is one of the most reliable and useful text-books published."—*Naturalist's Quarterly Review.*

\* \* A set of 41 microscopic slides specially designed by Professor CAVERS for use with his books is supplied at £1 5s. net.

## Physics.

**The Tutorial Physics.** By R. WALLACE STEWART, D.Sc., E. CATCHPOOL, B.Sc., C. J. L. WAGSTAFF, M.A., W. R. BOWER, A.R.C.Sc., and J. SATTERLY, D.Sc., B.A. In 6 Vols.

**I. Sound, Text-Book of.** By E. CATCHPOOL, B.Sc. *Fifth Edition, Revised and Enlarged.* 4s. 6d.

"A full, philosophical, and decidedly original treatment of this branch of physics."—*Educational Times.*

**II. Heat, Higher Text-Book of.** By R. W. STEWART, D.Sc. 6s. 6d.

"Clear, concise, well arranged, and well illustrated."—*Journal of Education.*

**III. Light, Text-Book of.** By R. W. STEWART, D.Sc. *Fourth Edition, Revised and Enlarged.* 4s. 6d.

"A very full and able treatment of the elements of Geometrical Optics."—*Educational News.*

**IV. Magnetism and Electricity, Higher Text-Book of.** By R. W. STEWART, D.Sc. *Second Edition.* 6s. 6d.

"The text is exceedingly lucid and painstaking in the endeavour to give the student a sound knowledge of physics."—*Nature.*

**V. Properties of Matter.** By C. J. L. WAGSTAFF, M.A. *Third Edition.* 3s. 6d.

"Very interesting sections are those on moments of inertia from an elementary point of view, Boys' modification of Cavendish's experiment, surface tension, and capillarity."—*School.*

**VI. Practical Physics.** By W. R. BOWER, A.R.C.S., and J. SATTERLY, D.Sc., B.A. 4s. 6d.

"Great pains have evidently been taken to secure efficiency, and the result is a text-book which merits great praise."—*Nature.*

**The New Matriculation Heat: The New Matriculation Light: The New Matriculation Sound.** By R. W. STEWART, D.Sc. 2s. 6d. each volume.

"The treatment is lucid and concise, and thoroughly in accordance with the most recent methods of teaching elementary physics. An outstanding feature of these books is the inclusion of a number of experiments which may be performed with the most simple and inexpensive apparatus, and from which satisfactory results may be obtained."—*Nature.*

**Electricity, Technical.** By Professor H. T. DAVIDGE, B.Sc., M.I.E.E., and R. W. HUTCHINSON, B.Sc. *2nd Ed.* 4s. 6d.

"A most desirable combination of sound instruction in scientific principles and engineering practice."—*Educational News.*

**Magnetism and Electricity, Matriculation.** By R. H. JUDE, M.A., D.Sc., and JOHN SATTERLY, D.Sc., B.A. Specially written for the current London University syllabus in this subject. 4s. 6d.

"This volume gives evidence at every stage of the ripe scholarship of its authors as well as of their high teaching ability."—*Educational News.*

## Chemistry, etc.

**The Tutorial Chemistry.** By G. H. BAILEY, D.Sc., Ph.D. Edited by WM. BRIGGS, LL.D., M.A., B.Sc., F.C.S.

Part I. Non-Metals. *Fourth Edition.* 3s. 6d.

Part II. Metals and Physical Chemistry. *Sec. Ed.* 4s. 6d.

"The leading truths and laws of chemistry are here expounded in a most masterly manner."—*Chemical News.*

**Chemistry for Matriculation.\*** By G. H. BAILEY, D.Sc. Ph.D., and H. W. BAUSOR, M.A. 5s. 6d.

This books contains a course of elementary Chemistry, theoretical and practical, covering the new London University Matriculation syllabus. It is specially suited to modern methods of teaching.

**Chemical Analysis, Qualitative and Quantitative.** By WM. BRIGGS, LL.D., M.A., B.Sc., F.C.S., and R. W. STEWART, D.Sc. *Fourth Edition.* 3s. 6d.

**The Junior Chemistry.** By R. H. ADIE, M.A., B.Sc., Lecturer in Chemistry, St. John's College, Cambridge. 2s. 6d. *Second Edition.*

A course of combined theoretical and practical work covering the requirements of the Oxford and Cambridge Junior Locals.

"A useful and practical course, constructed on thoroughly scientific principles."—*Oxford Magazine.*

**The Elements of Organic Chemistry.** By E. I. LEWIS, B.A., B.Sc., Science Master at Oundle School. 2s. 6d.

The fundamental principles of the Chemistry of Carbon Compounds developed from and illustrated by the behaviour of the Ethyl, Methyl, Phenyl, and Benzyl compounds mainly.

"A useful book containing many well selected typical experiments. The directions are clearly and carefully given."—*Secondary Education.*

**Systematic Practical Organic Chemistry.** By G. M. NORMAN, B.Sc., F.C.S. *Second Edition.* 1s. 6d.

**Perspective Drawing, The Theory and Practice of.** By S. POLAK, Art Master. 5s.

A complete course of instruction covering the requirements of the Board of Education Syllabus in Perspective Drawing.

**Science German Course.** By C. W. PAGET MOFFATT, M.A., M.B., B.C. *Second Edition.* 3s. 6d.

"Provides a convenient means of obtaining sufficient acquaintance with the German language to read simple scientific descriptions in it with intelligence."—*Nature.*

---

\* Sets of apparatus and reagents are supplied specially designed for use with this book—Set A, 13s. 6d.; Set B, £2.

## French.

**Junior French Course.** By E. WEEKLEY, M.A., Professor of French at University College, Nottingham, and Examiner in the University of London. *Second Edition.* 2s. 6d.

"Distinctly an advance on similar courses."—*Journal of Education.*

**The Matriculation French Course.** By E. WEEKLEY, M.A. *Third Edition, Enlarged.* 3s. 6d.

"The rules are well expressed, the exercises appropriate, and the matter accurate and well arranged."—*Guardian.*

**French Accidence, The Tutorial.** By ERNEST WEEKLEY, M.A. With Exercises. *Third Edition.* 3s. 6d.

"We can heartily recommend it."—*Schoolmaster.*

**French Syntax, The Tutorial.** By ERNEST WEEKLEY, M.A., and A. J. WYATT, M.A. *Second Edition.* With Exercises. 3s. 6d.

"It is a decidedly good book."—*Guardian.*

**French Grammar, The Tutorial.** Containing the *Accidence* and the *Syntax* in One Volume. *Second Edition.* 4s. 6d. Also the Exercises on the *Accidence*, 1s. 6d. ; on the *Syntax*, 1s.

**Groundwork of French Composition.** By E. WEEKLEY, M.A. 2s.

**French Prose Composition.** By E. WEEKLEY, M.A. With Notes and Vocabulary. *Third Edition, Enlarged.* 3s. 6d.

"The arrangement is lucid, the rules clearly expressed, the suggestions really helpful, and the examples carefully chosen."—*Educational Times.*

**Junior French Reader.** By E. WEEKLEY, M.A. With Notes and Vocabulary. *Second Edition.* 1s. 6d.

"A very useful first reader with good vocabulary and sensible notes."—*Schoolmaster.*

**French Prose Reader.** By S. BARLET, B. ès Sc., and W. F. MASOM, M.A. With Notes and Vocabulary. *Third Edition.* 2s. 6d.

"Admirably chosen extracts."—*School Government Chronicle.*

**Matriculation French Reader.** Containing Prose, Verse, Notes, and Vocabulary. By J. A. PERRET, late Examiner in French in the University of London. 2s. 6d.

"We can recommend this book without reserve."—*School World.*

**Advanced French Reader.** By S. BARLET, B. ès Sc., and W. F. MASOM, M.A. *Second Edition.* 2s. 6d.

"Chosen from a large range of good modern authors."—*Schoolmaster.*

**Higher French Reader.** By E. WEEKLEY, M.A. *Second Edition.* 3s. 6d.

"The passages are well chosen."—*Journal of Education.*

## English Classics.

- Burke.**—Revolution in France. By H. P. ADAMS, M.A. 2s. 6d.
- Chaucer.**—Canterbury Tales. By A. J. WYATT, M.A. With Glossary. Prologue. 1s. Knight's Tale, Nun's Priest's Tale, Man of Law's Tale, Squire's Tale. Each with Prologue, 2s. 6d. Pardoner's Tale. By C. M. DRENNAN, M.A., and A. J. WYATT, M.A. 2s. 6d.
- Gray.**—Poems. By A. J. F. COLLINS, M.A. 2s. 6d.
- Johnson.**—Life of Milton. By S. E. GOGGIN, M.A. 1s. 6d.
- Johnson.**—Rasselas. By A. J. F. COLLINS, M.A. 2s.
- Keats.**—Odes. By A. R. WEEKES, M.A. 1s. 6d.
- Langland.**—Piers Plowman. Prologue and Passus I.-VII. By J. F. DAVIS, D.Lit., M.A. 4s. 6d.
- Milton.**—Early Poems, Comus, Lycidas. By S. E. GOGGIN, M.A., and A. F. WATT, M.A. 2s. 6d. Areopagitica. 1s. 6d. Comus. 1s. Lycidas. 1s.
- Milton.**—Paradise Lost, Books I., II. By A. F. WATT, M.A. 1s. 6d. Books IV., V. By S. E. GOGGIN, M.A. 1s. 6d. Books V., VI. By A. J. F. COLLINS, M.A., and S. E. GOGGIN, M.A. 1s. 6d.
- Milton.**—Paradise Regained. By A. J. WYATT, M.A. 2s. 6d.
- Milton.**—Samson Agonistes. By A. J. WYATT, M.A. 2s. 6d.
- More.**—Utopia. By R. R. RUSK, Ph.D. 2s.
- Pope.**—Rape of the Lock. By A. F. WATT, M.A. 1s. 6d.
- Shakespeare :—**
- |   |   |
|---|---|
| <u>As You Like It.</u> By A. R. WEEKES, M.A. 2s.          | <u>Merchant of Venice.</u> By S. E. GOGGIN, M.A. 2s.    |
| <u>Coriolanus.</u> By A. J. F. COLLINS, M.A. 2s.          | <u>Midsummer Night's Dream.</u> By A. F. WATT, M.A. 2s. |
| <u>Hamlet. King Lear.</u> By S. E. GOGGIN, M.A. 2s. each. | <u>Richard II.</u> By A. F. WATT, M.A. 2s.              |
| <u>Julius Caesar.</u> By A. F. WATT, M.A. 2s.             | <u>The Tempest.</u> By A. R. WEEKES, M.A. 2s.           |
- Shakespeare.** By Prof. W. J. ROLFE, D.Litt. In 40 volumes.  
The Plays (including Two Noble Kinsmen) at 2s. 6d. each, except King John, Midsummer Night's Dream, and Much Ado about Nothing, which are published at 2s. each. Also Sonnets, 2s. 6d.; Venus and Adonis, 2s. 6d.
- Shelley.**—Adonais. By A. R. WEEKES, M.A. 1s. 6d.
- Spenser.**—Faerie Queene, Book I. By W. H. HILL, M.A. 2s. 6d.

## English Language and Literature.

**The English Language: Its History and Structure.** By W. H. LOW, M.A. With TEST QUESTIONS. *Sixth Edition, Revised.* 3s. 6d.

"A clear workmanlike history of the English language done on sound principles."  
—*Saturday Review.*

**The Matriculation English Course.** By W. H. LOW, M.A., and JOHN BRIGGS, M.A., F.Z.S. *Third Edition.* 3s. 6d.

CONTENTS.—Historical Sketch—Sounds and Symbols—Outlines of Accidence and Syntax—Common Errors—Analysis—Parsing—The Word, the Sentence, the Paragraph—Punctuation—Rules for Composition—Simple Narrative—Compound Narrative—Descriptive Composition—The Abstract Theme—The Essay—Paraphrasing—Précis-Writing—Style and Diction—Prosody—Index.

"The matter is clearly arranged, concisely and intelligently put, and marked by accurate scholarship and common-sense."—*Guardian.*

**English Literature, The Tutorial History of.** By A. J. WYATT, M.A. *Third Edition, continued to the present time.* 2s. 6d.

"This is undoubtedly the best school history of literature that has yet come under our notice."—*Guardian.*

"The scheme of the book is clear, proportional, and scientific."—*Academy.*

"A sound and scholarly work."—*St. James's Gazette.*

**English Literature, The Intermediate Text-Book of.** By W. H. LOW, M.A., and A. J. WYATT, M.A. 6s. 6d.

"Really judicious in the selection of the details given."—*Saturday Review.*

"Well-informed and clearly written."—*Journal of Education.*

"The historical part is concise and clear, but the criticism is even more valuable, and a number of illustrative extracts contribute a most useful feature to the volume."—*School World.*

**An Anthology of English Verse.** With Introduction and Glossary. By A. J. WYATT, M.A., and S. E. GOGGIN, M.A. 2s.

For use in Training Colleges and Secondary Schools. The extracts have been selected as representative of English verse from Wyatt to the present time (exclusive of drama).

"We look upon this collection as one of the best of its kind."—*Teachers' Aid.*

**Précis-Writing, A Text-Book of.** By T. C. JACKSON, B.A., LL.B., and JOHN BRIGGS, M.A., F.Z.S. 2s. 6d.

In writing this text-book, the authors have aimed at increasing the educational value of Précis-Writing by giving a more systematic and a less technical treatment to the subject than is usual.

"Admirably clear and businesslike."—*Guardian.*

"Thoroughly practical, and on right lines educationally."—*School World.*



## Philosophy.

**Ethics, Manual of.** By J. S. MACKENZIE, Litt.D., M.A., formerly Fellow of Trinity College, Cambridge. *Fourth Edition.* 6s. 6d.

"In writing this book Mr. Mackenzie has produced an earnest and striking contribution to the ethical literature of the time."—*Mind*.

**Logic, A Manual of.** By J. WELTON, M.A., Professor of Education, University of Leeds. 2 vols. Vol. I., 8s. 6d.; Vol. II., 6s. 6d.

Vol. I. contains the whole of Deductive Logic, except Fallacies, which are treated, with Inductive Fallacies, in Vol. II.

"A clear and compendious summary of the views of various thinkers on important and doubtful points."—*Journal of Education*.

**Psychology, The Groundwork of.** By G. F. STOUT, M.A., LL.D., Fellow of the British Academy, Professor of Logic and Metaphysics in the University of St. Andrews. 4s. 6d.

"All students of philosophy, both beginners and those who would describe themselves as 'advanced,' will do well to 'read, mark, learn, and inwardly digest' this book."—*Oxford Magazine*.

**Psychology, A Manual of.** By G. F. STOUT, M.A., LL.D. 8s. 6d.

"There is a refreshing absence of sketchiness about the book, and a clear desire manifested to help the student in the subject."—*Saturday Review*.

## Modern History and Constitution.

**The Tutorial History of England.** (To 1901.) By C. S. FEARENSIDE, M.A. 4s. 6d.

"An excellent text-book for the upper forms of a school."—*Journal of Education*.

**Matriculation Modern History.** Being the History of England 1485-1901, with some reference to the Contemporary History of Europe and Colonial Developments. By C. S. FEARENSIDE, M.A. 3s. 6d.

"A work that gives evidence of scholarship and clever adaptability to a special purpose."—*Guardian*.

**Groundwork of English History.** By M. E. CARTER. 2s.

"It presents the salient facts of English History in a readable but definite form, unencumbered with irrelevant detail."—*Schoolmaster*.

**European History, Main Landmarks of.** By F. N. DIXON, B.A. *Second Edition.* 2s.

"A capable sketch in which historical movements are indicated accurately and with vigour."—*Guardian*.

**Outlines of English History.** By M. E. CARTER. 3s. 6d.

Also in Three Parts:—(1) To 1603. (2) 1485 to 1714. (3) 1660 to 1901. 1s. 6d. each part.

**Government of the United Kingdom.** By A. E. HOGAN, LL.D. 2s. 6d.

CONTENTS.—Introduction — Legislature — Executive — Judicial System—Local Government—Imperial Government.

## Geography.

**A Text-Book of Geography.** By G. C. FRY, M.Sc., F.I.C. 4s. 6d.

This book is intended for use in the upper forms of schools and by candidates for London University Matriculation, the Oxford and Cambridge Locals, and other Examinations of similar standard.

It deals with both General and Regional Geography. In Regional Geography the natural features are first dealt with and then the political facts that are the outcome of these features.

"The compilation is by no means one of mere geographical facts; the 'why' and the 'wherefore' are everywhere in evidence—the subject is, indeed, presented scientifically."—*Schoolmaster*.

"It is one of the most scientific and rational text-books yet published."—*Educational News*.

## Roman and Greek History.

**The Tutorial History of Rome.** (To 37 A.D.) By A. H. ALLCROFT,

M.A., and W. F. MASOM, M.A. With Maps. *Fourth Edition, Revised and in part Rewritten.* Or in Two Vols., 2s. each: Vol. I., to 133 B.C.; Vol. II., 133 B.C.—37 A.D.

"It is well and clearly written."—*Saturday Review*.

"A distinctly good book, full, clear, and accurate."—*Guardian*.

**The Tutorial History of Greece.** (To 323 B.C.) By Prof. W. J. WOODHOUSE, M.A. 4s. 6d.

"Prof. Woodhouse is exceptionally well qualified to write a history of Greece, and he has done it well."—*School World*.

**A Longer History of Rome.** By A. H. ALLCROFT, M.A., and others (each volume containing an account of the Literature of the Period)—

390—202 B.C. 3s. 6d.

78—31 B.C. 3s. 6d.

202—133 B.C. 3s. 6d.

44 B.C.—138 A.D. 3s. 6d.

133—78 B.C. 3s. 6d.

"Written in a clear and direct style. Its authors show a thorough acquaintance with their authorities, and have also used the works of modern historians to good effect."—*Journal of Education*.

**A Longer History of Greece.** By A. H. ALLCROFT, M.A. (each volume containing an account of the Literature of the Period)—

To 495 B.C. 3s. 6d.

404—362 B.C. 3s. 6d.

495—431 B.C. 3s. 6d.

362—323 B.C. 3s. 6d.

440—404 B.C. 3s. 6d.

Sicily, 491—289 B.C. 3s. 6d.

"The authors have apparently spared no pains to make their work at once comprehensive and readable."—*Schoolmaster*.

# Latin and Greek.

## GRAMMARS AND READERS.

**Junior Latin Course.** By B. J. HAYES, M.A. 2s. 6d.

"A good practical guide. The principles are sound, and the rules are clearly stated."—*Educational Times*.

**The Tutorial Latin Grammar.** By B. J. HAYES, M.A., and W. F. MASOM, M.A. *Fourth Edition*. 3s. 6d.

"Accurate and full without being overloaded with detail."—*Schoolmaster*.

**Latin Composition.** With copious Exercises and easy continuous Passages. By A. H. ALLCROFT, M.A., and J. H. HAYDON, M.A. *Sixth Edition, Enlarged*. 2s. 6d.

"Simplicity of statement and arrangement, apt examples illustrating each rule, exceptions to these adroitly stated just at the proper place and time, are among some of the striking characteristics of this excellent book."—*Schoolmaster*.

**Junior Latin Reader.** By E. J. G. FORSE, M.A. 1s. 6d.

**Matriculation Selections from Latin Authors.** With Introduction (History and Antiquities), Notes, and Vocabulary. By A. F. WATT, M.A., and B. J. HAYES, M.A. 2s. 6d.

Provides practice in reading Latin in preparation for Examinations for which no classics are prescribed.

"It is quite an interesting selection, and well done."—*School World*.

"The selection is a good one, and the notes are brief and to the purpose."—*Journal of Education*.

**Matriculation Latin Construing Book.** By A. F. WATT, M.A., and B. J. HAYES, M.A. 2s.

A guide to the construing of the Latin period and its translation into English.

"One of the most useful text-books of this very practical Tutorial Series."—*School Guardian*.

**The Tutorial Latin Reader.** With VOCABULARY. 2s. 6d.

"A soundly practical work."—*Guardian*.

**Advanced Latin Unseens.** Edited by H. J. MAIDMENT, M.A., and T. R. MILLS, M.A. *Second Edition, Enlarged*. 3s. 6d.

"Contains some good passages, which have been selected from a wider field than that previously explored by similar manuals."—*Cambridge Review*.

**The Tutorial Latin Dictionary.** By F. G. PLAISTOWE, M.A., late Fellow of Queens' College, Cambridge. 6s. 6d.

"A sound school dictionary."—*Speaker*.

**Advanced Greek Unseens.** *Second Edition, Enlarged*. 3s. 6d.

**The Tutorial Greek Reader.** With VOCABULARIES. By A. WAUGH YOUNG, M.A. *Third Edition, Enlarged*. 2s. 6d.

## Editions of Latin and Greek Classics.

The Text is in all cases accompanied by Introduction and Notes; books marked (\*) contain also an alphabetical Lexicon.

The Vocabularies are in order of the text and are preceded by Test Papers.

	Text.	Voc.		Text.	Voc.
Acts of Apostles.	...	1/0	CURTIUS—		
AESCHYLUS—			Book 9, Ch. 6-end.	1/6	...
Eumenides.	3/6	1/0	DEMOSTHENES—		
Persae.	3/6	...	Androtion.	4/6	...
Prometheus Vincetus.	2/6	1/0	EURIPIDES—		
Septem contra Thebas.	3/6	1/0	Alcestis.	1/6	1/0
ARISTOPHANES—			Andromache.	3/6	...
Ranae.	3/6	...	Bacchae.	3/6	1/0
CAESAR—			Hecuba.	3/6	...
Civil War, Book 1.	1/6	...	Hippolytus.	3/6	1/0
Civil War, Book 3.	2/6	1/0	Iphigenia in Tauris.	3/6	1/0
Gallic War, Books 1-7.			Medea.	2/0	...
(each)	1/6	1/0	HERODOTUS—		
Gallic War, Book 1,			Book 3.	4/6	1/0
Ch. 1 to 29.	1/0	...	Book 4, Ch. 1-144.	4/6	1/0
The Invasion of Britain.	1/6	1/0	Book 6.	2/6	1/0
Gallic War, Book 7, Ch.			Book 8.	3/6	...
1 to 68.	1/0	...	HOMER—		
CICERO—			Iliad, Book 6.	...	1/0
Ad Atticum, Book 4.	3/6	...	Iliad, Book 24.	3/6	...
De Amicitia.	*1/6	1/0	Odyssey, Books 9, 10.	2/6	...
De Finibus, Book 1.	2/6	...	Odyssey, Books 11, 12.	2/6	...
De Finibus, Book 2.	3/6	...	Odyssey, Books 13, 14.	2/6	...
De Officiis, Book 3.	3/6	1/0	Odyssey, Book 17.	1/6	1/0
De Senectute.	*1/6	1/0	HORACE—		
In Catilinam 1.-IV.	2/6	...	Epistles (including <i>Ars</i>		
" I., II.	1/6	1/0	<i>Poetica</i> ).	4/6	...
" I., III. (each)	1/6	1/0	Epistles (excluding <i>A.P.</i> )	...	1/0
" I. and IV.	1/6	...	Epodes.	1/6	...
Philippic II.	2/6	1/0	Odes, Books 1-4.	*3/6	...
Pro Archia.	1/6	1/0	Separately, each Book	*1/6	1/0
Pro Balbo.	...	1/0	Satires.	3/6	1/0
Pro Cluentio.	3/6	1/0	ISOCRATES—		
Pro Lege Manilia.	2/6	1/0	De Igiis	2/6	...
Pro Marcello.	1/6	1/0			
Pro Milone.	3/6	1/0			
Pro Plancio.	3/6	1/0			
Pro Roscio Amerino.	2/6	1/0			

## Editions of Latin and Greek Classics—continued.

	Text.	Voc.		Text.	Voc.
<b>JUVENAL—</b>			<b>SALLUST—</b>		
Satires 1, 3, 10, 11.	3/6	...	Catiline.	1/6	1/0
Satires 1, 3, 4.	3/6	...	<b>SOPHOCLES—</b>		
Satires 8, 10, 13.	2/6	...	Ajax.	3/6	1/0
Satires 11, 13, 14.	3/6	...	Antigone.	2/6	1/0
<b>LIVY—</b>			Electra.	3/6	1/0
Books 1, 5. (each)	2/6	1/0	<b>TACITUS—</b>		
Book 2, Ch. 1-50.	2/6	1/0	Agricola.	2/6	1/0
Books 3, 6, 9. (each)	3/6	1/0	Annals, Book 1.	2/6	1/0
Book 9, Ch. 1-19.	1/6	...	Annals, Book 2.	2/6	...
Book 21, Ch. 1-30.	1/6	...	Germania.	2/6	1/0
Books 21, 22. (each)	2/6	1/6	Histories, Books 1, 3.	(each) 3/6	1/0
<b>LUCIAN—</b>			<b>TERENCE—</b>		
Charon and Piscator.	3/6	1/0	Adelphi.	3/6	...
<b>LYSIAS—</b>			<b>THUCYDIDES—</b>		
Eratosthenes.	2/6	...	Book 7.	3/6	...
Eratosth. and Agoratus.	...	1/0	<b>VERGIL—</b>		
<b>NEPOS—</b>			Aeneid, Books 1-8. (each)	*1/6	1/0
Hannibal, Cato, Atticus.	1/0	...	Books 7-10.	3/6	...
<b>OVID—</b>			Book 9.	*1/6	...
Fasti, Books 3, 4.	2/6	1/0	Books 9, 10.	...	1/0
Fasti, Books 5, 6.	3/6	1/0	Book 10.	*1/6	...
Heroides, 1-10.	3/6	1/0	Book 11.	*1/6	1/0
Heroides, 1, 2, 3, 5, 7, 12.	...	1/6	Book 12.	*1/6	...
Heroides, 1, 5, 12, 1/6; 12,	1/0	...	Eclogues.	3/6	1/0
Metamorphoses, Book 1,			Georgics.	4/6	...
lines 1-150; Book 3,			Georgics, Books 1 and 2.	3/6	1/0
lines 1-250, 511-733;			Georgics, Books 1 and 4.	1/6	1/0
Book 5, lines 385-550.			Georgics, Book 4.	1/6	...
(each)	1/6	...	<b>XENOPHON—</b>		
Book 11.	...	1/0	Anabasis, Book 1.	1/6	1/0
Book 11, lines 410-748.	1/6	...	Anabasis, Book 4.	1/6	...
Books 13, 14. (each)	1/6	1/0	Cyropaedeia, Book 1.	1/6	1/0
Tristia, Books 1, 3. (each)	1/6	1/0	Cyropaedeia, Book 5.	...	1/0
<b>PLATO—</b>			Hellenica, Books 3, 4.	(each) 1/6	...
Phaedo, 3/6; Apology.	3/6	1/0	Memorabilia, Book 1.	3/6	1/0
Crito.	2/6	1/0	Oeconomicus.	4/6	1/0
Crito and Euthyphro.	2/6	..			
Euthyphro and Mene-					
xenus.	4/6	1/0			
Ion, Laches. (each)	3/6	1/0			

*A detailed catalogue of the above can be obtained on application.*

## The University Tutorial Series.

General Editor: WM. BRIGGS, LL.D., D.C.L., M.A., B.Sc.,

Principal of University Correspondence College.

The object of the UNIVERSITY TUTORIAL SERIES is to provide candidates for examinations and learners generally with text-books which shall convey in the simplest form sound instruction in accordance with the latest results of scholarship and scientific research. Important points are fully and clearly treated, and care has been taken not to introduce details which are likely to perplex the beginner.

The Publisher will be happy to entertain applications from Teachers for Specimen Copies of books mentioned in this List.

### SOME PRESS OPINIONS.

"This series is successful in hitting its mark and supplying much help to students in places where a guiding hand is sorely needed."—*Journal of Education*.

"Many editors of more pretentious books might study the methods of the 'University Tutorial Series' with profit."—*Guardian*.

"The 'University Tutorial Series' is favourably known for its practical and workmanlike methods."—*Public Schools Year Book*.

"The series is eminently successful."—*Spectator*.

"The classical texts in this series are edited by men who are thoroughly masters of their craft."—*Saturday Review*.

"The competent manner in which the volumes of this series are edited is now well known and generally recognised."—*Educational Times*.

"This useful series of text-books."—*Nature*.

"Any books published in this series are admirably adapted for the needs of the large class of students for whom they are intended."—*Cambridge Review*.

"Clearness in statement and orderliness in arrangement characterise the publications of the University Tutorial Press."—*Oxford Magazine*.

"All books which issue from the 'University Tutorial Press' are both scholarly and practical."—*Westminster Review*.

"The merit of this series of publications consists in the workmanlike execution of an orderly practical plan."—*School Government Chronicle*.

"The books of the 'University Tutorial Series' have deservedly won a high reputation for sound scholarship, clear and orderly arrangement and presentation, and practical and up-to-date methods."—*Bookman*.

"The more we see of these excellent manuals the more highly do we think of them."—*Schoolmaster*.

"Such text-books are immeasurably superior to the heavy tomes, overburdened with extraneous matter, with which boys of a previous generation were familiar."—*School Guardian*.





THIS BOOK IS DUE ON THE LAST DATE  
STAMPED BELOW

AN INITIAL FINE OF 25 CENTS  
WILL BE ASSESSED FOR FAILURE TO RETURN  
THIS BOOK ON THE DATE DUE. THE PENALTY  
WILL INCREASE TO 50 CENTS ON THE FOURTH  
DAY AND TO \$1.00 ON THE SEVENTH DAY  
OVERDUE.

NOV 30 1963

JUN 29 1942

JUN 17 5

28 APR 1967

REC'D LD

FEB - 1 1958

19 MAY 1961

REC'D LD

MAY 7 1961



YB 23119

BC108

H6

215194

Hilman

